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# Electrical Contracting

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# Electrical Contracting

VOLUME 30

With which is incorporated The Electragist

NUMBER 7

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## Resale Price News

Slight increases in prices were noted during the past month in a number of products, among which were extension arms, standard surface receptacles, T slot heavy duty polarized receptacles, canopy receptacles, sign receptacles, entrance and panel switches, Westinghouse 30 amp. porcelain base switches, and Sangamo time switches.

Reflecting manufacturers' new list prices, increases in prices have been made in socket cap and bodies, candle sockets, candelabra sockets, pull end switches, ceiling pull switches, heavy duty pull cord switches, type "O" pull switches, pendant switches, feed through switches and door switches.

Additions to the listings include two-light base adapters, knockout seals, 1¼ in., 1½ in. and 2 in. thin walled conduit, meter test type cabinets, two piece porcelain outlet box receptacles, decorative weatherproof sockets, Square D meter service switches with branch circuit cabinet, range and lighting entrance switches, 400 and 600 amp. type A switches with arc suppressors.

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# A SALES OPPORTUNITY



## WHERE TO SELL

Specialty Shops

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Gift Shops

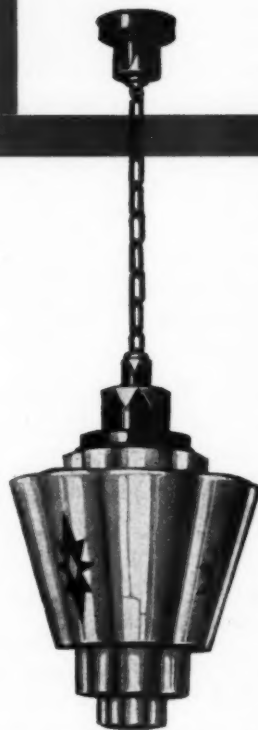
Jewelry Stores

and Similar

"Smart" Interiors

**T**HE owner of the specialty shop shown above bought Wakefield Modernistic lighting units from the picture on Data Sheet 900. After the installation he declared that he had "The best lighted store in Alliance, Ohio." Wakefield Modernistic makes good. . . . The selling points of Modernistic can be summed up in 20 words—clever, ultra-snappy design—lighting efficiency better than that of most commonplace enclosing globes—substantial material, skilled workmanship and permanent finish. . . . Those who buy it like it. . . . As for construction, Wakefield Modernistic has all the clever, labor-saving features of other Wakefield units—it is quick and easy to hang, thus insuring the contractor 25 to 50 cents extra profit on each unit installed in addition to his regular margin on the fixtures. . . . Send for Data Sheet 900 and maybe you, too, can sell a job like the one shown above, simply by showing the picture of the unit.

**The F. W. WAKEFIELD BRASS CO.**  
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Standard finish, E. S. Bronze and Matt Aluminum. Screwless holders. Can be supplied with semi-rigid or stem-and-loop construction. See Data Sheet 900.

## *An Industry Need*

**M**ORE and more as the industry thinks of the future of the electrical market does it become convinced that the crux of the whole thing is wiring. And as the industry for the first time becomes wiring conscious, it becomes painfully apparent that very little is really known about wiring.

Is wiring too expensive? Some say it is, but do they really know; or are they merely taking the position that lower prices per se automatically make for greater usage?

Are new wiring methods needed, or are our present methods adequate? Bare neutral, concentric wire, flexible non-metallic surface raceway, small diameter underfloor cable, and many others have been proposed as means to greatly reduce wiring costs. Will they? Can they give as good service to the public? Is the approach to the subject one entirely of cost?

• • •

**A**RE we installing our materials in the best way? Many of our methods have been unchanged for years. Are there not perhaps some new methods that better fit the changing building demands?

What constitutes adequacy in the wiring of residences, factories and commercial buildings? Is it enough to specify just so many watts per square foot and let it go for any kind

of building, or should there not be an adequacy requirement based upon occupancy? What are the factors that determine adequacy and for how far in the future should the wiring be adequate?

How can increased wiring standards be sold to the public? What does it cost to sell adequacy and are there not perhaps other methods that are more effective and more economical?

• • •

**I**N other words the industry needs a research department in wiring so that the public may have greater use of electric service. People talk about wiring very glibly but as a matter of fact very little is known of its economics. Everybody has an idea, a theory or a new wiring method, but they get us nowhere. What we need today are facts.

An industry research department in wiring would produce the facts—the facts that are so sorely needed before we can go ahead on a program of market development with any assurance of success.

ELECTRICAL CONTRACTING urges that through the efforts of the national associations representing all branches of the industry such a research department be set up to function for the industry as an unbiased fact-finding body on all phases of wiring—products, methods, commercial and economic.



for handling

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# Electrical Contracting

*With which is incorporated The Electragist*

VOLUME 30

MAY, 1931

NUMBER 7

## Muzzle Your Ferret

By JOHN WISE  
*The Successful Contractor*



ONCE upon a time a city youth was spending a few weeks on his cousin's farm. Now, he'd heard a lot about hunting rabbits with a ferret and always wanted to have a try at it. So he had his cousin bring him home one of those "underground bloodhounds" and started out.

He found a rabbit hole easily enough and shoved his ferret into it. Then he lit his pipe and watched the nearby holes, waiting for the little fellow to chase out the game. When nothing happened for half an hour he knew something was wrong, so he lit some grass and shoved it in the hole. Pretty soon Mr. Ferret crawled slowly out of the next hole, covered with blood, fat as a pig and grinning like the cat that just ate the canary.

The city boy lost his temper and was about to beat the ferret's brains out when a boy driving cows dashed up. "Don't do that, mister!" he yelled, "It ain't his fault—he's only a ferret. If you don't muzzle him, he'll kill the first rabbit, drink his blood and call it a day."

But when the ferret is muzzled he's a dif-

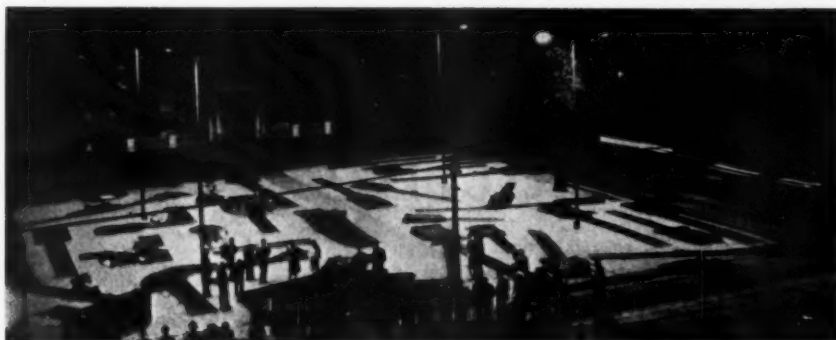
ferent person. If he can't kill 'em he can't eat 'em, so he stays hungry and stays on the job. He'll keep on running rabbits into your nets for days and days, because he knows business can't be like this forever.

A contractor can be like that unless he minds his knitting. I get a good job and that's that—I feel like

the salesman who knocks off \$1,000.00 in the morning and says: "Well, there's two days' work—guess I'll go to the ball game."

We're all easy prey for that warm glow of satisfaction; but don't let it blossom, brother. It's the old ferret stuff. That contract is just the first rabbit. Not only is there more business on that job, but there are other jobs coming up which I must contact and sell.

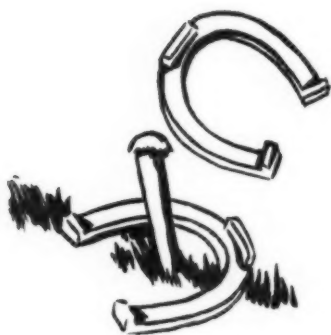
Here's how I keep myself hungry and it will work with anybody. Instead of shoving my overhead and other disagreeable bogies out of sight I keep close tab on all the outgo, business and personal, and every time I look at that picture, the old foot goes down on the gas a little harder. It's a good habit and once a fellow has a mark to shoot at, he'll never stop at the first rabbit.



## GOLF

Golf in its various forms presents probably the greatest single market for outdoor sport lighting. The 50,000 miniature golf courses in the country offer tremendous possibilities in relighting. The growing popularity of pitch and putt or mashie golf presents another large market and the lighting of major golf courses is proving very successful.

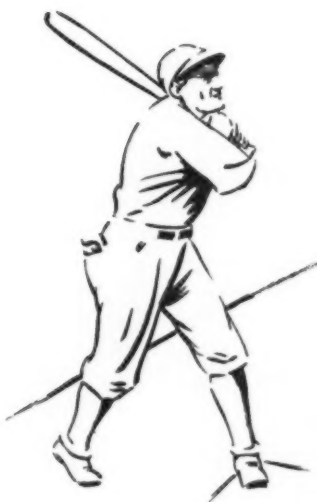
# A \$44,000,000 Outdoor Sport



The opportunities for the contractor in outdoor sport lighting are enormous. Not only does the market include practically all of the present popular sports but lighting for night playing is making possible new sports and reviving many old games.

Outdoor sport lighting is past the experimental stage. Likewise its acceptance by the public is no longer doubtful. Thus the momentum of its popularity backed by the assurance of its success, is developing it into a major sales activity during 1931.

## The Outdoor Sport Lighting Market



### ATHLETIC FIELDS

2,000 fields to be lighted at an average cost of \$1,000.  
Resulting business for 1931.. \$2,000,000

### BASEBALL

6 stadiums to be lighted at an average cost of \$50,000 each. \$ 300,000  
100 minor league fields to be lighted at an average cost of \$20,000 each..... 2,000,000  
75 semi-pro and municipal fields to be lighted at an average cost of \$10,000 each 750,000  
Resulting business for 1931.. \$3,050,000

### BEACHES

180 municipal beaches to be lighted at an average cost of \$5,000 ..... \$ 900,000  
170 summer resort beaches to be lighted at an average cost

of \$3,000..... 510,000

Resulting business for 1931.... \$1,410,000

### FOOTBALL

500 school fields to be lighted at an average cost of \$5,000 each ..... \$2,500,000  
300 municipal fields to be lighted at an average cost of \$5,000 each..... 1,500,000

Resulting business for 1931... \$4,000,000

### GOLF DRIVING RANGES

2,500 ranges to be lighted at an average cost of \$1,500 each.  
Resulting business ..... \$3,750,000

### MAJOR GOLF COURSES

50 nine-hole courses to be lighted at an average cost of \$20,000 each.  
Resulting business for 1931.. \$1,000,000

## TENNIS

Tennis, although one of the first outdoor sports to be lighted for night playing, still offers tremendous possibilities in lighting. Only a small percentage of the 36,500 courts in the country have been lighted but those installations, when properly made, prove without doubt the success of night tennis.



# MARKET *for* Lighting in 1931



The figures given here will show the estimated sales possibilities during the year. Due to experimental and limited application in the past, these figures are not based exactly on last year's installations. Neither do they represent the total market, but in fact are only a small percentage of the potential possibilities. They are, however, based on the experience of last year's activities and designate the portion of the potential market available during 1931 provided reasonable sales effort is employed.

## Lighting Opportunity

### MINIATURE GOLF

10,000 courses to be lighted or relighted at an average cost of \$750.00 each.  
Resulting business for 1931... **\$7,500,000**

### PITCH AND PUTT GOLF

2,000 courses to be lighted at an average cost of \$5,000 each.  
Resulting business for 1931... **\$10,000,000**

### PLAYGROUNDS

1,200 playgrounds to be lighted at an average cost of \$1,000 each.  
Resulting business for 1931... **\$1,200,000**

### RACE TRACKS

12 tracks to be lighted at an average cost of \$15,000 each **\$ 180,000**  
250 tracks to be lighted at an average cost of \$6,000 each.. **1,500,000**  
Resulting business for 1931... **\$1,680,000**

### SWIMMING POOLS

300 pools to be underwater lighted at an average cost of \$5,000 each..... **\$1,500,000**  
600 pools to be overhead lighted at an average cost of \$1,000 each..... **600,000**  
Resulting business for 1931.... **\$2,100,000**

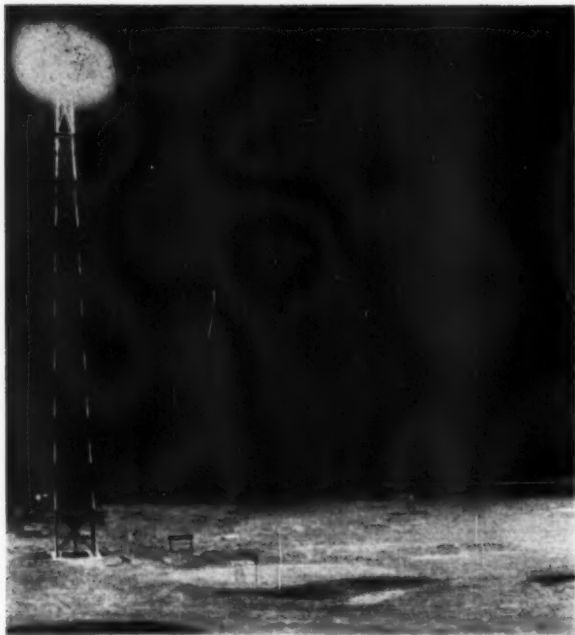
### TENNIS

4,000 courts to be lighted at an average cost of \$500 each.  
Resulting business for 1931... **\$2,000,000**

### MISCELLANEOUS

Horseshoe pitching courts, trap-shooting ranges, athletic stadium, hockey rinks, croquet, archery, shuffle-board, handball, toboggan slides, bowling - on - the - green and volley-ball.  
Resulting business for 1931... **\$4,000,000**





# ERRORS in Outdoor Sports

## PITCH AND PUTT COURSES

*Improper Placing of Equipment*—There are two types of courses to be found; those running clockwise and others counter-clockwise. If the second type mentioned are lighted from units banked on inside of course, one is always in his own shadow; if the course is clockwise, this system is satisfactory. For counter-clockwise play units should be located near outside holes, to eliminate shadows. On long holes (75 yards or more) it is necessary to have light behind tee, directed along line of flight so that ball may be seen throughout its entire flight. In the installation illustrated two towers of similar type were used.



## RACE TRACK

*Wide Spacing, Low Mounting*—Where this condition exists it will cause a picket shadow effect, horses will break, and their speed will be materially reduced. R. L. M. Dome Reflectors, equipped with 1000-1500 watt lamps mounted 30' high and spaced 50' apart, eliminate the above-mentioned hazard. These should be located along both sides of the track coming down the home stretch.



## TRAP SHOOTING

*Inadequate Illumination*—Since it is necessary to see the bird quickly, regardless of the direction it may go, there should be enough projectors of the proper distribution to illuminate the

bird to a 5 footcandle intensity throughout its entire flight. Six 1000-watt medium-spread projectors located behind the handicap stands prove satisfactory.

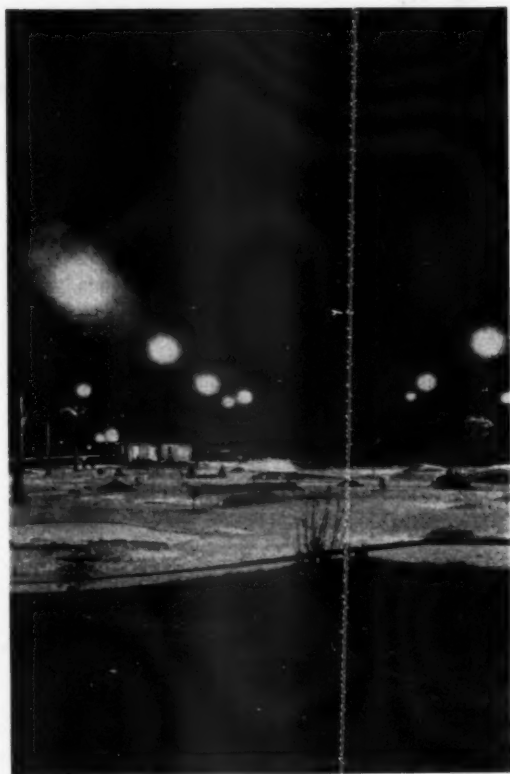


By DEAN M. WARREN

Nela Park Engineering Department  
General Electric Co., Cleveland, Ohio

Due to rapid growth of outdoor sport lighting, installations have been made without consideration given to new problems, resulting in dissatisfied customers. The more common errors and their corrections are given here in an effort to assist contractors in working out these problems.

# Sport Lighting and their Remedy»



## FOOTBALL

**Too Wide a Spacing of Poles**—Where the field is lighted by means of equipment located on poles at each side of the field, it is desirable, for uniform distribution of illumination, to have at least five poles on each side.

**Glare**—Quite frequently units are not mounted high enough to give satisfactory illumination, with a minimum of glare. Units should not be mounted less than 40 feet from the ground and preferably 50 feet. If there are high stands on either side of field, it is preferable, from the glare standpoint, to mount the units at least 50 feet. If equipment is mounted behind the stands, the equipment should be mounted at a minimum of 70 feet, preferably 90 feet.

**Inadequate Wiring**—Voltage—Because of excessive voltage drop, long runs and inadequate wiring lamps frequently burn at too low an efficiency. Economy is increased when lamps are burned at 10% over voltage giving 38% additional light at an expenditure of only 16% in wattage. Lamps will usually last through two or three seasons play.

*Electrical Contracting, May, 1931*

## MINIATURE GOLF COURSES

**Shadows and Glare**—Caused by spacing units too far apart and failure to mount them high enough. In order to minimize shadows, the spacing should not exceed the mounting height. When floodlight projectors are used they should be mounted at least 40 feet high. All other units should be mounted at least 25 feet high on account of annoyance from insects. Where open type reflectors are tipped up too far, excessive lamp failures may be caused due to rain striking the hot bulb, or from large insects, which when they strike the bulb are cooked; the moisture in their bodies may cause breakage.



## PRACTICE GOLF DRIVING COURSES

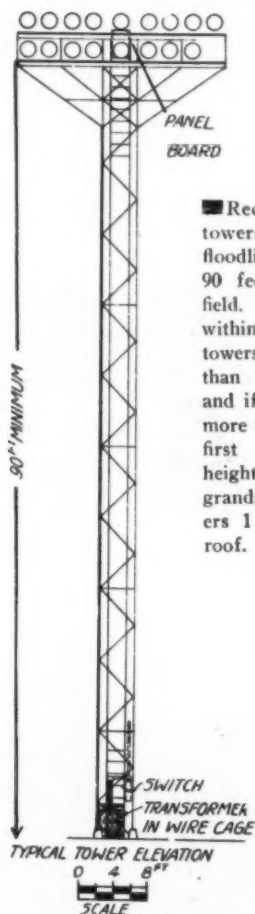
**Improper Type of Equipment and Lamps**—Two types of equipment are used; a high candlepower concentrating type of reflector equipped with a 1000-watt G-40 bulb lamp for lighting the long drives and a medium angle projector equipped with a 1000-watt PS-52 bulb lamp to light the short high shots. Every third unit should be of the latter type.





Baseball installation employing enclosed projectors on towers mounted on the grandstand.

# Baseball Requires A



■ Recommended locations of towers mounting enclosed type floodlighting projectors at least 90 feet high shown in plan of field. Towers may be moved within cross-hatched areas. If towers 1 and 4 are located more than 100 feet from home plate and if towers 2 and 5 are located more than 160 feet from third and first base respectively, tower heights must be increased. If grandstand structure permits towers 1 and 4 may be erected on roof.

Downward projectors required with visors on top are: I—6 projectors; II—7 projectors; III—12 projectors; IV—22 projectors; V—23 projectors. Upward projectors, visors on bottom fan out to evenly cover sky above entire field. Bottom cut off above grandstand roof and above fence. Projectors on towers 1, 2 and 3 adjusted to illuminate left field in same manner as shown for towers 4, 5 and 6.

SUMMARY OF PROJECTORS

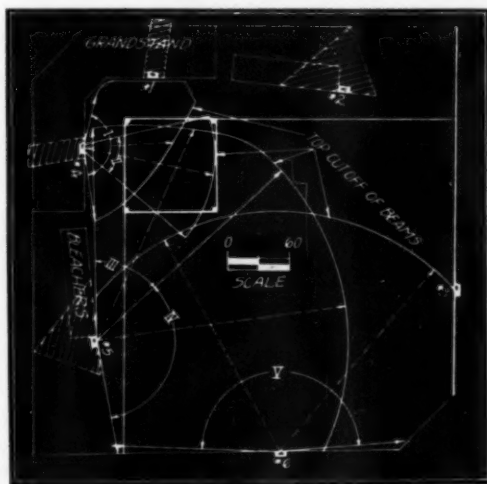
Tower Number	Visor on Top	Visor on Bottom	Total Projectors	Total K.W. Rated Voltage	Total K.W. 10% Over Voltage
1	13	4	17	25.5	29.8
2	34	10	44	66.0	77.1
3	23	6	29	43.5	50.9
4	13	4	17	25.5	29.8
5	34	10	44	66.0	77.1
6	23	6	29	43.5	50.9
Total	140	40	180	270.0	315.6

In baseball field lighting the ball must be so lighted that it is visible in all directions at all times, regardless of whether the ball is on the ground or a high fly. If the ball is lighted only on one side, either the spectators or the players cannot see the ball distinctly. On the infield a higher intensity is needed than on the outfield, because of the "hot" infield drives that travel close to the ground. They have to be lighted to such an intensity that the players can judge the speed of the ball coming, and that the spectators can also follow the ball. From 35 to 50 ft.-candles intensity is needed on the entire infield and 25 ft.-candles is required in the outfield.

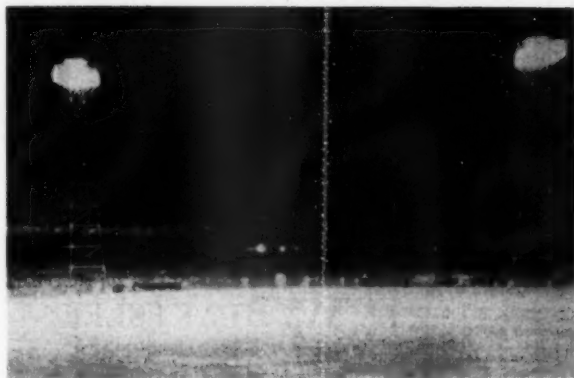
The reason for less intensity on the outfield than on the infield is because the ball has to travel a greater distance to get to the outfield, and is not moving as fast as on the infield. Therefore, the players have a greater length of time to judge and to watch the ball.

The principal line of play is the batted ball and the cross

PLAN OF FIELD USING ENCLOSED TYPE PROJECTORS



Electrical Contracting, May, 1931



Indianapolis field lighted from towers in front of grandstand.



Omaha field lighted with open type floodlights.

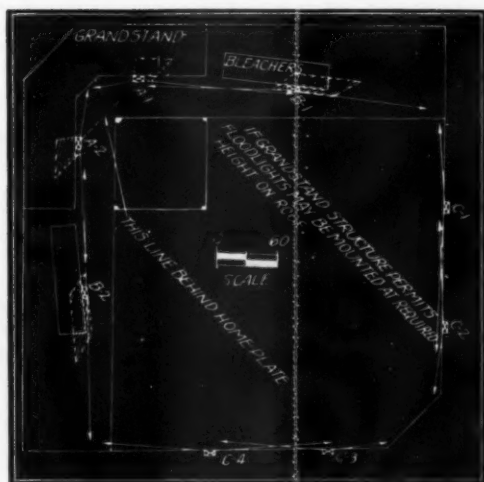
# Adequate Lighting

throwing at the bases. Therefore, there must be two towers behind home-plate, with a considerable open space on the line of the batter, so that the pitcher does not get the glare when pitching. Also, when the ball leaves the bat, there will be an open space at the back of the batter so that the players do not get the glare from the projectors.

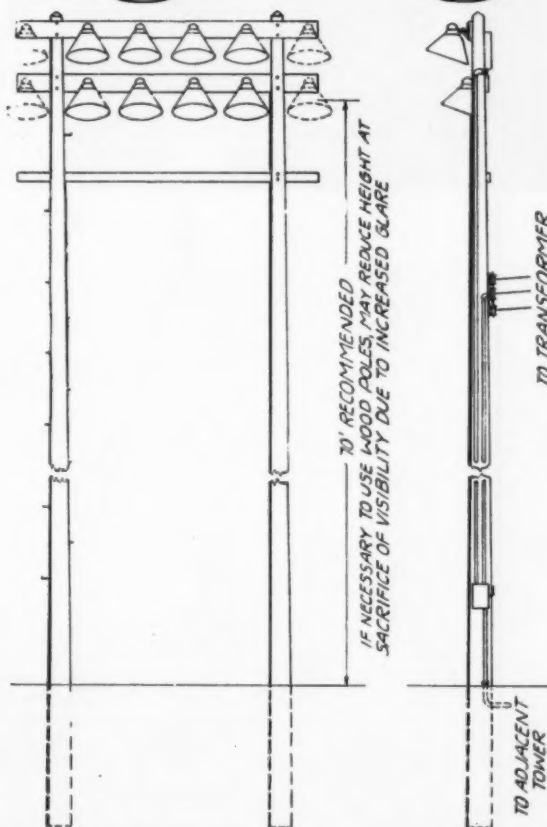
There must be two poles outside of the foul lines between first and second, and second and third, to light the ball cross-wise. There must be two towers on the outfield to light the face of the ball as it is batted out.

When open type reflectors are used two additional towers are needed, one on each side of the outfield. If there is insufficient beam candlepower when open type floodlights only are used, there is likely to be a low intensity streak through the center line of the field. This low intensity streak may be brought up to proper intensity by the addition of floodlight projectors of the proper distribution to fill in this area.

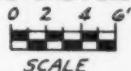
PLAN OF FIELD USING OPEN TYPE FLOODLIGHTS



Electrical Contracting, May, 1931



TYPICAL TOWER ELEVATION



SCALE

Adjust transformer voltage and select lamps to provide rated lamp voltage at socket. Towers may be moved within cross-hatched areas.

SUMMARY OF FLOODLIGHTS

Tower No.	Number of Floodlights	KW Per Location	Number of Locations	Total KW
A	8	24	2	48
B	14	42	2	84
C	8	24	4	96
Totals			8	228



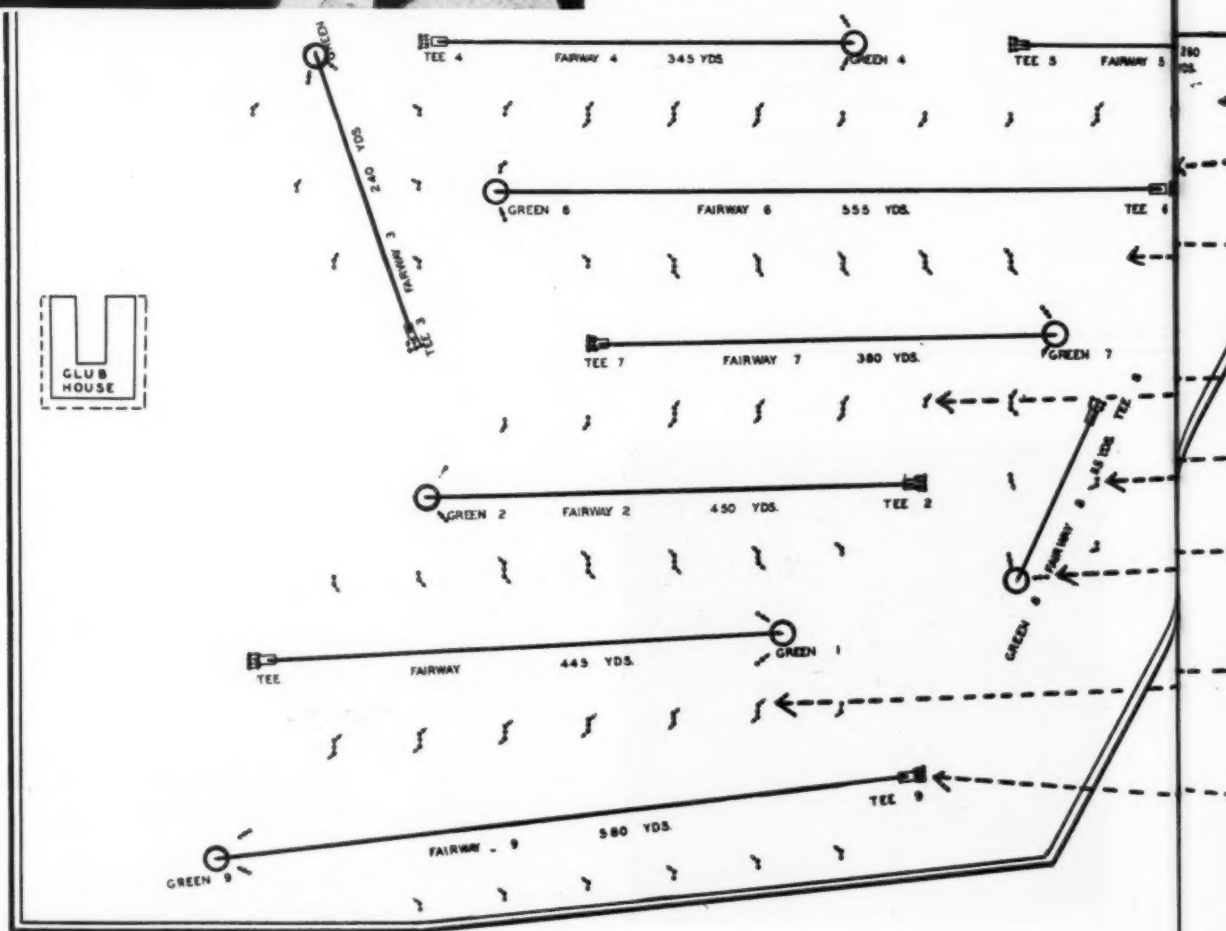
# Rules for Golf Course Lighting

By JOHN A. HOEVELER  
and

D. W. BLAKESLEE

*Engineering Department  
Pittsburgh Reflector Co., Pittsburgh*

- 1 Each golf course to be lighted should be carefully surveyed and individually engineered, applying general principles only after the various conditions are studied.





# Golf Course Lighting

**2** There must be adequate intensity of illumination both on the ground and in the air so that a golf ball may not be driven out of the range of lighting. The entire course should be covered with a blanket of light at least 100 ft. deep.

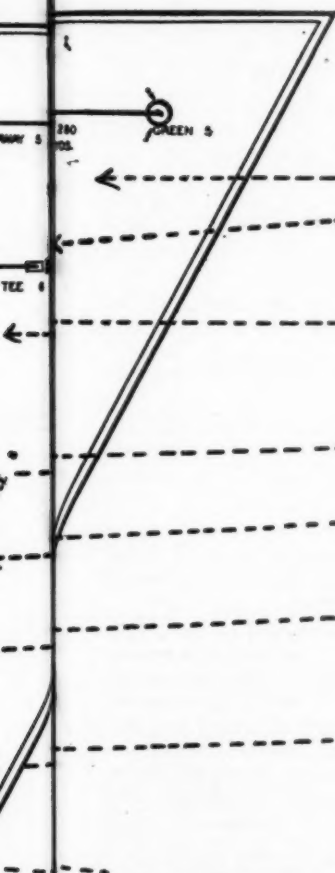
**3** The lighting should be in the direction of play and preferably from both sides of the fairway. Greens should be illuminated from both sides.

**4** The illumination should be free from deep shadows. This requires a careful study of elevation changes as well as the location of trees and other obstructions.

**5** Glare should be kept at a minimum. With sufficiently close spacing of poles, 35 ft. mounting heights are satisfactory. By facing the floodlights in the direction of play, the strong light is at the back of the golfer. The light from the adjacent fairway, although in the face of the golfer, is of such low intensity that it causes little glare, at the same time relieves the depth of shadow.

**6** For night play it is necessary to eliminate the rough and keep grass closely cropped on the fairway. Light striking the ground at acute angles casts long shadows even from short vertical obstructions, thus effectively concealing a ball.

## *Typical floodlighting of a nine-hole golf course.*



All floodlights use 1000 watt lamps and are mounted on poles approximately 35 ft. above the ground.

For the convenient maintenance of the floodlights, the poles should be stepped.

At distances varying from 70 to 100 yards, from the tee, wide beam floodlights with stipple cover glasses reinforce the illumination of the fairway from each side.

Similarly the location of additional wide beam floodlights with stipple cover glasses is repeated every 70 to 100 yards of fairway.

The floodlights are faced in the direction of play along the fairway. The arrows indicate the direction in which the floodlights point.

Approximately 40 ft. from each green individual wide beam floodlights with stippled cover glasses are installed for illumination of the greens.

Where fairways are adjacent to each other, the direction of play is opposite, but by carefully locating the poles in the boundaries between fairways, one line of poles can serve two fairways.

Behind each tee there is located a bank of floodlights aimed straight down the fairway. Half of the units are narrow beam with clear cover glasses. The other half are wide beam with stipple cover glasses. This bank lights the first 70 to 100 yds. of fairway. The spill light illuminates the tee.

Only in exceptional cases is it practical to illuminate a golf course from the perimeter, thereby avoiding the use of poles dotted over the course. The matter of appearance must give way to adequacy in illumination. However, distances on a golf course are so great that poles seem to lose themselves in the landscape.



# BACK YARD SPORTS

## CROQUET OR ROQUE

This game is one of the truly back-yard sports, and, while the size of the court is dependent upon the amount of available yard space, there are certain definite dimensions, and the lighting recommendations will, therefore, be given for the standard court 30' wide and 60' long. Such a court may be satisfactorily lighted by four 500-watt white bowl lamps in Standard R.L.M. Domes mounted 16 feet high on 4½-foot brackets. These four poles should be located along the sides of the court 12 feet from the end and 36 feet apart.

Overhead construction, of which the photograph is a typical example, is sometimes used but from an appearance standpoint fails to measure up to the above mentioned system.

This installation consists of ten R.L.M. Dome Reflectors, equipped with 200-watt lamps; the units are spaced 12 feet apart and hung on a messenger cable which spans the course and is attached at either end to 20-foot poles. Such an installation gives an extremely even distribution of light throughout the entire playing area.

## BOWLING ON THE GREEN

The majority of bowling is done on standard greens, 126 feet long and 126 feet wide, comprising six courts. However, since such an elaborate system would seldom be installed in the average back yard, the following recommendation will be for a two rink system.

Since it is not possible to erect poles within the playing area, the light must be provided from the sidelines or from units suspended over the rink. However, because of the comparatively great distance across the green, and the consequent heavy construction involved, the latter method is not generally desirable.

A satisfactory system would consist of six elliptical angle reflectors—three on each side, located five feet from the edge of the green and mounted on 20' poles. The poles should be located 21 feet from each end of the green and spaced 42 feet apart. The units should be equipped with 500-watt clear lamps and where the 20' mounting height is observed no direct light from the lamp will reach the eyes of the bowlers.

## HORSESHOE PITCHING

The lighting requirements for this particular sport are very simple and quite easily met, as the principal lighting requirement is to provide sufficient illumination at the pits and throughout the 40 feet separating them. Where there is only one court to be lighted, this may be done by mounting one elliptical angle reflector equipped with a 300-watt lamp, on a 20' pole and locating this pole approximately 6 feet from the pitching line and half way between the pits.

Satisfactory illumination for two adjacent courts may be provided by locating one R.L.M. Dome Reflector equipped with a 300-watt lamp, on a 20' pole and locating this pole half way between the two courts in a position mid-way between the pits.

These systems will provide an approximate intensity of 1 footcandle at the pits, and illuminate the shoe to an approximate intensity of 5 footcandles throughout its entire flight.

## VOLLEY BALL

In the lighting of volley ball courts, glare from the lamps must be reduced to a minimum, since practically all of the playing is done while the ball is overhead.

In order to provide satisfactory illumination for this sport, which is played on a court 30' wide by 60' long, it is recommended that 20' poles supporting a 4½' bracket arm and an R.L.M. Dome Reflector, equipped with a 1000-watt lamp, be located at either end of the net and approximately 7 feet outside the playing area. In addition to this, an identical arrangement of poles, lamps, and equipment should be located at either end of the court. Such a system will provide well-distributed illumination with a minimum of glare.

## ARCHERY

This sport is played on ranges varying from 20 to 60 yards. The lighting is simple, consisting of only one 250-watt narrow angle projector, mounted about 10 feet high immediately behind the archer. This will provide sufficient illumination on the target throughout the entire range.

*Electrical Contracting, May, 1931*

# Where to Buy Outdoor Sport Lighting Equipment

An index of manufacturers of equipment  
used by electrical contractors in wiring for  
outdoor sport lighting

## BRACKETS, POLE

American Appliance Co., Inc., Kalamazoo, Mich.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Brady Electric & Mfg. Co., New Britain, Conn.  
Dunlap Co., John, Carnegie, Pa.  
Electric Railway Equipment Co., Cincinnati, O.  
Electric Service Supplies Co., Philadelphia, Pa.  
Graybar Electric Co., New York, N. Y.  
Holophane Co., New York, N. Y.  
Kleigl Bros. Universal Electric Stage Lighting Co., New York, N. Y.  
Line Material Co., South Milwaukee, Wis.  
National Electric Products Corp., Pittsburgh, Pa.  
Overbush & Ayres Mfg. Co., Chicago, Ill.  
Union Metal Mfg. Co., Canton, Ohio.  
Westinghouse Elec. & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.

## CABINETS, WEATHERPROOF

All-Steel-Equip Co., Aurora, Ill.  
Bulldog Electric Products Co., Detroit, Mich.  
Corcoran Lamp Co., The Thos. J., Cincinnati, O.  
Graybar Electric Co., New York City.  
Holzer Sheet Metal Works, Inc., New Orleans, La.  
Penn Electrical Co., Irwin, Pa.  
Square D Co., Detroit, Mich.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## CABLE, LEAD COVERED

American Steel & Wire Co., Chicago, Ill.  
Anaconda Wire & Cable Co., New York, N. Y.  
Circle Flex, Conduit Co., Brooklyn, N. Y.  
General Electric Co., Schenectady, N. Y.  
Graybar Electric Co., New York City.  
Hazard Insulated Wire Works, Wilkes Barre, Pa.  
National Electric Products Corp., Pittsburgh, Pa.  
Simplex Wire & Cable Co., Boston, Mass.  
Triangle Conduit Co., Inc., Brooklyn, N. Y.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## CABLE, TRENCH

American Steel & Wire Co., Chicago, Ill.  
Anaconda Wire & Cable Co., New York, N. Y.  
General Electric Co., Schenectady, N. Y.  
Hazard Insulated Wire Works, Wilkes Barre, Pa.  
National Electric Products Corp., Pittsburgh, Pa.  
Simplex Wire & Cable Co., Boston, Mass.  
Triangle Conduit Co., Inc., Brooklyn, N. Y.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## CROSSARMS, STEEL

Bright Light Reflector Co., Brooklyn, N. Y.  
Da-Lite, Inc., Kansas City, Mo.  
Dunlap Co., John, Carnegie, Pa.  
Electric Railway Equipment Co., Cincinnati, Ohio.  
Electric Service Supplies Co., Philadelphia, Pa.  
International Derrick & Equipment Co., Columbus, Ohio.  
Line Material Co., South Milwaukee, Wis.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Quadrangle Mfg. Co., Chicago, Ill.  
Truscon Steel Company, Youngstown, Ohio.  
Union Metal Mfg. Co., Canton, Ohio.  
Wheeler Reflector Co., Boston, Mass.

## CROSSARMS, WOOD

Line Material Co., South Milwaukee, Wis.

## FITTINGS, CONDUIT, WEATHER-PROOF

Adalet Mfg. Co., The, Cleveland, Ohio.  
Appleton Electric Co., Chicago, Ill.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Crouse-Hinds Company, Syracuse, N. Y.  
Dunlap Co., John, Carnegie, Pa.  
General Electric Co., Schenectady, N. Y.  
Kleckley Co., O. C., Chicago, Ill.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Quadrangle Mfg. Co., Chicago, Ill.  
Overbush & Ayres Mfg. Co., Chicago, Ill.  
Ralco Mfg. Co., Chicago, Ill.  
Taplet Manufacturing Co., Philadelphia, Pa.  
Veco Mfg. Co., South Norwalk, Conn.  
Youngstown Sheet & Tube Co., Youngstown, Ohio

## FUSE BOXES, ENCLOSED, WEATHERPROOF

Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

## GUARDS, REFLECTOR

Quadrangle Mfg. Co., Chicago, Ill.

## HANGERS AND CHAINS, DISCONNECTING

Da-Lite, Inc., Kansas City, Mo.  
Dunlap Co., John, Carnegie, Pa.  
Line Material Co., South Milwaukee, Wis.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Overbush & Ayres Mfg. Co., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## INSULATORS, PORCELAIN

Illinois Electric Porcelain Co., Macomb, Ill.  
Knox Porcelain Corporation, Knoxville, Tenn.  
Porcelain Products, Inc., Findlay, Ohio.  
Thomas & Sons Co., R., East Liverpool, Ohio.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## JUNCTION BOXES, WEATHER-PROOF

Fullman Mfg. Co., Latrobe, Pa.  
Ralco Mfg. Co., Chicago, Ill.

## LIGHTING UNITS, WEATHER-PROOF ENCLOSING

Adalet Mfg. Co., The, Cleveland, Ohio.  
Appleton Electric Company, Chicago, Ill.  
Belson Mfg. Co., Chicago, Ill.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Corcoran Lamp Co., The Thos. J., Cincinnati, Ohio.  
Crouse-Hinds Co., Syracuse, N. Y.  
Da-Lite, Inc., Kansas City, Mo.  
Dunlap Co., John, Carnegie, Pa.  
Electric Service Supplies Co., Philadelphia, Pa.  
General Electric Co., Schenectady, N. Y.  
Giant Mfg. Co., Council Bluffs, Iowa.  
Holophane Co., New York, N. Y.

Kleckley Company, O. C., Chicago, Ill.  
Kleigl Bros. Universal Electric Stage Lighting Co., New York City.

Line Material Co., South Milwaukee, Wis.  
Major Equipment Co., Chicago, Ill.  
Marbelite Art Products Co., Chicago, Ill.  
Motor City Electric Co., Detroit, Mich.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Overbush & Ayres Mfg. Co., Chicago, Ill.  
Seymour Manufacturing Corp., Chicago, Ill.  
Taplet Manufacturing Co., Philadelphia, Pa.  
Tindall & White, New York City.  
Veco Manufacturing Co., So. Norwalk, Conn.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.

## MAST ARMS

Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Brady Electric & Mfg. Co., New Britain, Conn.  
Dunlap Co., John, Carnegie, Pa.  
Electric Railway Equipment Co., Cincinnati, O.  
General Electric Co., Schenectady, N. Y.  
International Derrick & Equipment Co., Columbus, Ohio.  
Line Material Co., South Milwaukee, Wis.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Union Metal Mfg. Co., Canton, Ohio.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## NEWELS

Line Material Co., South Milwaukee, Wis.  
Union Metal Mfg. Co., Canton, Ohio.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## OUTLET BOXES, WEATHER-PROOF

Adalet Mfg. Co., The, Cleveland, Ohio.  
Appleton Electric Company, Chicago, Ill.  
Corcoran Lamp Co., Thos. J., Cincinnati, Ohio.  
Crouse-Hinds Company, Syracuse, N. Y.  
General Electric Co., Schenectady, N. Y.  
Holzer Sheet Metal Works, Inc., New Orleans, La.  
Kleckley Company, O. C., Chicago, Ill.  
Motor City Electric Co., Detroit, Michigan.  
Pettyjohn Co., The, Terre Haute, Ind.  
Taplet Manufacturing Co., Philadelphia, Pa.  
Veco Mfg. Co., So. Norwalk, Conn.

## OUTLETS, POWER, WEATHER-PROOF

Adalet Mfg. Co., The, Cleveland, Ohio.  
Corcoran Lamp Co., The Thos. J., Cincinnati, Ohio.  
General Electric Co., Schenectady, N. Y.  
Motor City Electric Co., Detroit, Mich.  
Taplet Manufacturing Co., Philadelphia, Pa.

## POLES, CONCRETE

Electric Service Supplies Co., Philadelphia, Pa.  
Line Material Co., South Milwaukee, Wis.  
Pettyjohn Co., The, Terre Haute, Ind.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.



## POLES, IRON

Electric Railway Equipment Co., Cincinnati, O.  
Electric Service Supplies Co., Philadelphia, Pa.  
Line Material Co., South Milwaukee, Wis.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## POLES, STEEL

Da-Lite, Inc., Kansas City, Mo.  
Electric Railway Equipment Co., Cincinnati, O.  
Electric Service Supplies Co., Philadelphia, Pa.  
Hill-Standard Co., Anderson, Ind.  
International Derrick & Equipment Co., Columbus, Ohio  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
Line Material Co., South Milwaukee, Wis.  
Overbagh & Ayres Mfg. Co., Chicago, Ill.  
Truscon Steel Co., Youngstown, Ohio  
Union Metal Mfg. Co., Canton, Ohio  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## PROJECTORS, ENCLOSED

Appleton Electric Co., Chicago, Ill.  
Belson Mfg. Co., Chicago, Ill.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Bright Light Reflector Co., Brooklyn, N. Y.  
Corcoran Lamp Co., The Thos. J., Cincinnati, Ohio  
Crouse-Hinds Company, Syracuse, N. Y.  
Curtis Lighting, Inc., Chicago, Ill.  
Da-Lite, Inc., Kansas City, Mo.  
Electric Service Supplies Co., Philadelphia, Pa.  
General Electric Co., Schenectady, N. Y.  
Giant Mfg. Co., Council Bluffs, Iowa  
Keckley Co., O. C., Chicago, Ill.  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
Line Material Co., South Milwaukee, Wis.  
Major Equipment Co., Chicago, Ill.  
Marbelite Art Products Co., Chicago, Ill.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Pittsburgh Reflector Co., Pittsburgh, Pa.  
Reflector & Illuminating Co., Chicago, Ill.  
Seymour Manufacturing Corp., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.  
Wilcox, Crittenden & Co., Middletown, Conn.

## PROJECTORS, OPEN

American Appliance Co., Inc., Kalamazoo, Mich.  
American Playground Co., Anderson, Ind.  
Appleton Electric Co., Chicago, Ill.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Cahill Bros., New York City  
Carlisle & Finch Co., Cincinnati, Ohio  
Crouse-Hinds Company, Syracuse, N. Y.  
Da-Lite, Inc., Kansas City, Mo.  
Dunlap Co., John, Carnegie, Pa.  
Electric Service Supplies Co., Philadelphia, Pa.  
General Electric Co., Schenectady, N. Y.  
Giant Mfg. Co., Council Bluffs, Iowa  
Hill-Standard Co., Anderson, Ind.  
Jackson Electrical Co., Chicago, Ill.  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
Major Equipment Co., Chicago, Ill.  
Marbelite Art Products Co., Chicago, Ill.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Overbagh & Ayres Mfg. Co., Chicago, Ill.  
Quadrangle Mfg. Co., Chicago, Ill.  
Reflector & Illuminating Co., Chicago, Ill.  
Seymour Manufacturing Corp., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.

## PROJECTORS, ORNAMENTAL LANTERN, ENCLOSED

Electric Service Supplies Co., Philadelphia, Pa.  
General Electric Co., Schenectady, N. Y.  
Line Material Co., South Milwaukee, Wis.  
Seymour Manufacturing Corp., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## PROJECTORS, UNDERWATER

Belson Mfg. Co., Chicago, Ill.  
Crouse-Hinds Co., Syracuse, N. Y.  
Keckley Co., O. C., Chicago, Ill.  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
Motor City Electric Co., Detroit, Mich.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Pittsburgh Reflector Co., Pittsburgh, Pa.  
Seymour Manufacturing Corp., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## REELS, EXTENSION

Appleton Electric Co., Chicago, Ill.

## REFLECTORS

Appleton Electric Co., Chicago, Ill.  
Belson Mfg. Co., Chicago, Ill.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Bright Light Reflector Co., Brooklyn, N. Y.  
Cahill Bros., New York City  
Corcoran Lamp Co., The Thos. J., Cincinnati, Ohio  
Crouse-Hinds Co., Syracuse, N. Y.  
Curtis Lighting, Inc., Chicago, Ill.  
Da-Lite, Inc., Kansas City, Mo.  
Dunlap Co., John, Carnegie, Pa.  
Electric Service Supplies Co., Philadelphia, Pa.  
Holophane Co., New York, N. Y.  
Jackson Electrical Co., Chicago, Ill.  
Keckley Co., O. C., Chicago, Ill.  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
Major Equipment Co., Chicago, Ill.  
Marbelite Art Products Co., Chicago, Ill.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Overbagh & Ayres Mfg. Co., Chicago, Ill.  
Pittsburgh Reflector Co., Pittsburgh, Pa.  
Quadrangle Mfg. Co., Chicago, Ill.  
Reflector & Illuminating Co., Chicago, Ill.  
Seymour Manufacturing Corp., Chicago, Ill.  
Taplet Manufacturing Co., Philadelphia, Pa.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.

## SERVICE BOXES, ENCLOSED WEATHERPROOF

Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

## SOCKETS, WEATHERPROOF

Arrow Electric Division, Arrow, Hart & Hegeman Corp., Hartford, Conn.  
Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Bright Light Reflector Co., Brooklyn, N. Y.  
Bryant Electric Co., Bridgeport, Conn.  
Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.  
Crouse-Hinds Company, Syracuse, N. Y.  
Cutler-Hammer, Inc., Milwaukee, Wis.  
Dunlap Co., John, Carnegie, Pa.  
Eagle Electric Mfg. Co., Inc., Brooklyn, N. Y.  
Electric Service Supplies Co., Philadelphia, Pa.  
General Electric Co., Schenectady, N. Y.  
Hart & Hegeman Division, Arrow, Hart & Hegeman Corp., Hartford, Conn.  
Line Material Co., South Milwaukee, Wis.  
Motor City Electric Co., Detroit, Mich.  
Multi Electrical Mfg. Co., Chicago, Ill.  
Overbagh & Ayres Mfg. Co., Chicago, Ill.  
Pass & Seymour, Inc., Syracuse, N. Y.  
Ralco Mfg. Co., Chicago, Ill.  
Taplet Manufacturing Co., Philadelphia, Pa.  
Wood Electric Co., C. D., New York City.

## SOUND SYSTEMS

Giant Mfg. Co., Council Bluffs, Iowa  
Operadio Mfg. Co., St. Charles, Ill.  
Radio Receptor Co., Inc., New York City  
Universal Sound System, Philadelphia, Pa.

## STANDARDS, CAST ALUMINUM

Veco Mfg. Co., South Norwalk, Conn.

## STANDARDS, CAST IRON

Electric Railway Equipment Co., Cincinnati, Ohio  
Electric Service Supplies Co., Philadelphia, Pa.  
Line Material Co., South Milwaukee, Wis.  
Union Metal Mfg. Co., Canton, Ohio  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## STANDARDS, CONCRETE

Electric Service Supplies Co., Philadelphia, Pa.  
Line Material Co., South Milwaukee, Wis.  
Pettyjohn Co., The, Terre Haute, Ind.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## STANDARDS, GRANITE

Electric Service Supplies Co., Philadelphia, Pa.  
Line Material Co., South Milwaukee, Wis.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## STANDARDS, STEEL

Da-Lite, Inc., Kansas City, Mo.  
Electric Railway Equipment Co., Cincinnati, Ohio  
Electric Service Supplies Co., Philadelphia, Pa.  
International Derrick & Equipment Co., Columbus, Ohio  
Line Material Co., South Milwaukee, Wis.  
Union Metal Mfg. Co., Canton, Ohio  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## STREET LIGHTING UNITS

Benjamin Electric Mfg. Co., Des Plaines, Ill.  
Dunlap Co., John, Carnegie, Pa.  
General Electric Co., Schenectady, N. Y.  
Giant Mfg. Co., Council Bluffs, Iowa  
Line Material Co., South Milwaukee, Wis.  
Marbelite Art Products Co., Chicago, Ill.  
Seymour Manufacturing Corp., Chicago, Ill.  
Veco Manufacturing Co., So. Norwalk, Conn.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.  
Wheeler Reflector Co., Boston, Mass.

## SUSPENSION ASSEMBLIES

Bright Light Reflector Co., Brooklyn, N. Y.  
Dunlap Co., John, Carnegie, Pa.  
Line Material Co., South Milwaukee, Wis.  
Overbagh & Ayres Mfg. Co., Chicago, Ill.  
Quadrangle Mfg. Co., Chicago, Ill.  
Reflector & Illuminating Co., Chicago, Ill.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Wheeler Reflector Co., Boston, Mass.

## SWITCHES, BRANCH CIRCUIT

Arrow Electric Division, Arrow, Hart & Hegeman Co., Hartford, Conn.  
Bryant Electric Co., Bridgeport, Conn.  
Corcoran Lamp Co., The Thos. J., Cincinnati, Ohio  
Crouse-Hinds Co., Syracuse, N. Y.  
Cutler-Hammer, Inc., Milwaukee, Wis.  
General Electric Co., Schenectady, N. Y.  
Hart & Hegeman Division, Arrow, Hart & Hegeman Co., Hartford, Conn.  
Holzer Sheet Metal Works, Inc., New Orleans, La.

Penn Electrical Co., Irwin, Pa.

Square D Co., Detroit, Mich.

Trumbull Electric Mfg. Co., Plainville, Conn.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## SWITCHES, SAFETY

Colt's Patent Fire Arms Mfg. Co., Hartford, Conn.

Crouse-Hinds Company, Syracuse, N. Y.  
Cutler-Hammer, Inc., Milwaukee, Wis.  
General Electric Co., Schenectady, N. Y.  
Square D Co., Detroit, Mich.  
Trumbull Electric Mfg. Co., Plainville, Conn.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## SWITCHES, TIME

Automatic Electric Mfg. Co., Mankato, Minn.  
Buckeye Time Switches, Inc., Cleveland, Ohio  
General Electric Co., Schenectady, N. Y.  
Hartford Time Switch Co., New York City  
Line Material Co., South Milwaukee, Wis.  
Paragon Electric Co., Chicago, Ill.  
Reliance Automatic Lighting Co., Racine, Wis.  
Sangamo Electric Co., Springfield, Ill.  
Walser Automatic Timer Co., New York City  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

## SWITCHES, WEATHERPROOF, ACCESSIBLE FUSE SERVICE

Wadsworth Electric Mfg. Co., Covington, Ky.

## TOWERS, STEEL

Blaw-Knox Co., Pittsburgh, Pa.  
Da-Lite, Inc., Kansas City, Mo.  
International Derrick & Equipment Co., Columbus, Ohio

Line Material Co., South Milwaukee, Wis.

Truscon Steel Company, Youngstown, Ohio

## TRANSFORMERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Duncan Electric Mfg. Co., Lafayette, Ind.  
General Electric Co., Schenectady, N. Y.  
Kuhlman Electric Company, Bay City, Mich.  
Line Material Co., South Milwaukee, Wis.  
Sorgel Electric Co., Milwaukee, Wis.  
Surges Electric Co., Milwaukee, Wis.  
Trester Service Electric Co., Milwaukee, Wis.  
Wagner Electric Corp., St. Louis, Mo.  
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

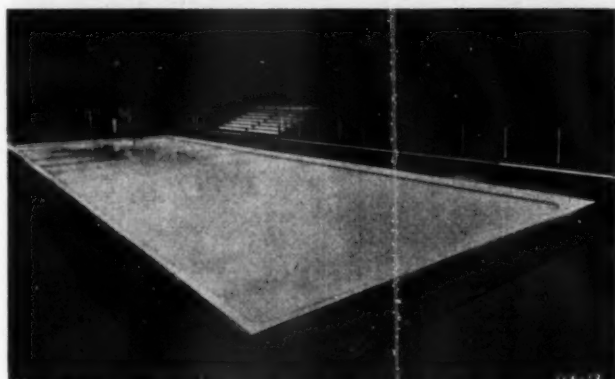
## WIRE, FLEXIBLE WEATHER-PROOF

American Steel & Wire Co., Chicago, Ill.  
Anaconda Wire & Cable Co., New York, N. Y.  
Circle Flex. Conduit Co., Brooklyn, N. Y.  
General Electric Co., Schenectady, N. Y.  
Hazard Insulated Wire Works, Wilkes Barre, Pa.  
Kliegl Bros. Universal Electric Stage Lighting Co., New York City  
National Electric Products Corp., Pittsburgh, Pa.  
**WIRE, SPAN**  
American Steel & Wire Co., Chicago, Ill.  
Anaconda Wire & Cable Co., New York, N. Y.  
Copperweld Steel Co., Glassport, Pa.  
General Electric Co., Schenectady, N. Y.

Electrical Contracting, May, 1931



# Lighting for Night Bathing



Underwater lighting of swimming pools is becoming increasingly popular. However, murky or unfiltered water sometimes found in outdoor pools prohibits adequate lighting from an underwater source. If the water is sufficiently clear to see the bottom 10 ft. below the surface during the daytime, the pool can be satisfactorily lighted by an underwater installation.

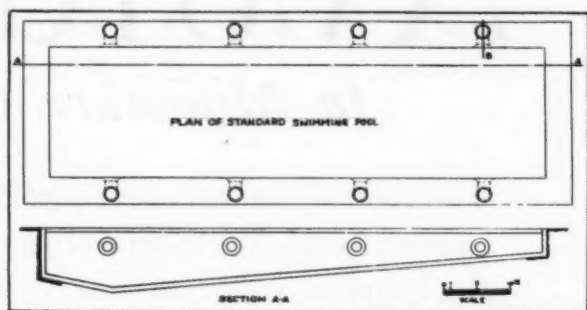


Diagram of pool lighted by the underwater method. If pool is made of dark material, painting it white will improve the light intensity.

Beach lighting offers a real opportunity to the contractor. For a permanent installation, the excessive exposure of equipment must be considered. If installed along ocean fronts salt-resisting equipment should be used. Beaches should be lighted to an intensity of from  $\frac{1}{4}$  to 1 ft. candle. The maximum spacing of towers should be 400 ft. with a mounting height of at least 40 ft. and preferably 80 ft.



Electrical Contracting, May, 1931

Outdoor night lighting for bathing differs somewhat from indoor pool lighting thus presenting new problems to the contractor.

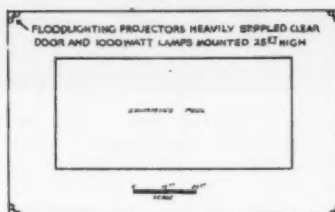
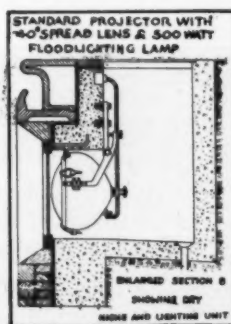
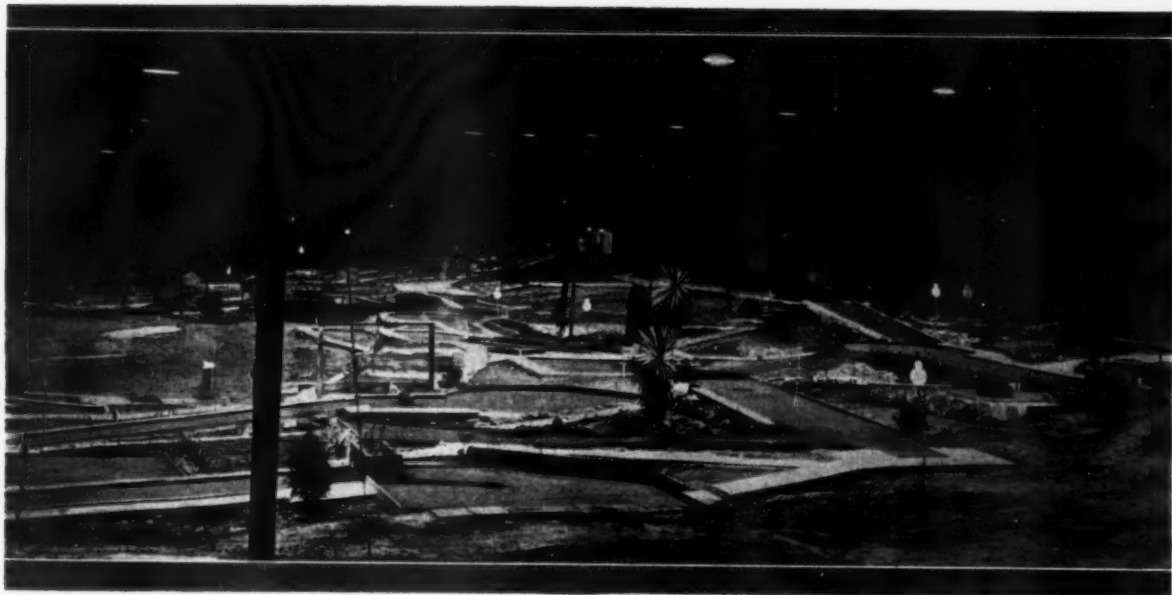


Diagram of pool lighted from the surface. Only 4 standards are employed.



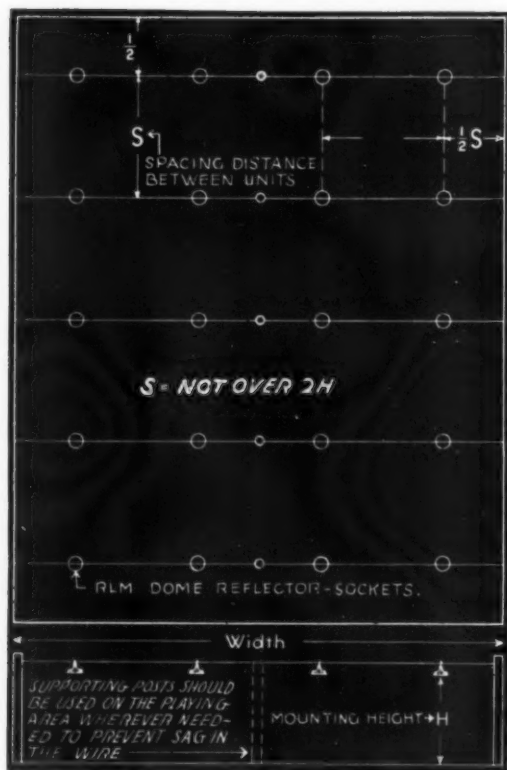


A miniature golf course lighted from overhead with R. L. M. dome reflectors.

# Avoid

## *In Miniature Golf*

The lighting of miniature golf courses, pitch and putt courses, clock green, etc., requires, first of all, a fairly high intensity of light, well diffused and uniform.



Layout for overhead lighting with R. L. M. dome reflectors.

### OVERHEAD LIGHTING

Although it is possible to get enough light by simply "spotting" units over the individual fairways and greens, it is much better to plan a layout which will give as nearly as possible uniform coverage over the entire playing area. At the ends of the field the distance from the boundary line to the reflectors is only one-half the spacing distance in order to prevent any drop in illumination at those extremes.

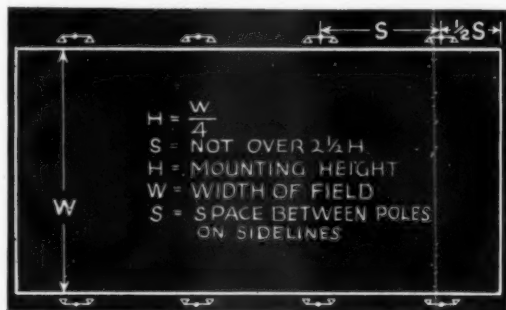


Miniature golf course lighted from the side. With proper mounting heights and spacing of units, the entire playing area can be uniformly lighted, shadows, where they may occur, may be made soft and luminous and glare is practically eliminated.

# Glare

## Golfcourse Lighting

Harsh shadows should be avoided and glare should be minimized. The field should, as far as possible, be free from poles or other obstructions.



Layout for lighting from side with open type wide angle diffusing floodlights. By using poles with cross-arms supporting two units fewer poles are required. Sufficient units to do a good job of lighting can be installed, as the cost of a few extra light units is a small part of the saving effected in the cost of poles and their setting and anchoring.

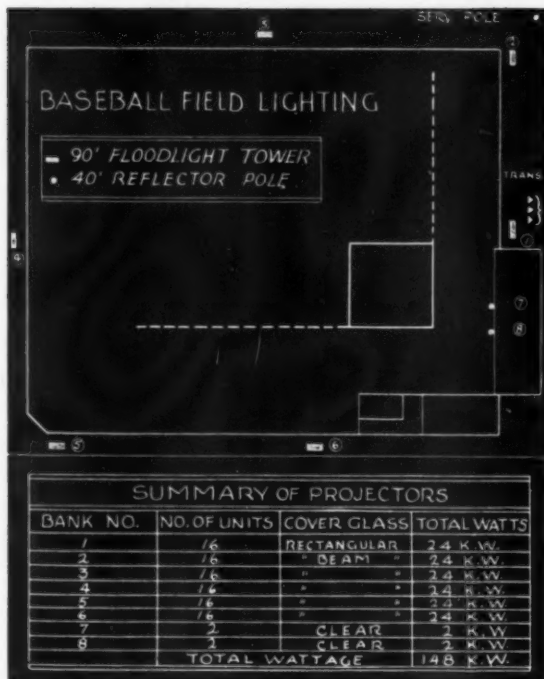
By J. H. WATERBURY

*Illuminating Engineer,  
Benjamin Electric Mfg. Co., Des Plaines, Ill.*

### LIGHTING FROM THE SIDE

While lighting from units directly overhead produces excellent results from the standpoint of illumination, it has disadvantages in that the units, even when suspended at a good height, bring mosquitoes and bugs into the playing zone. Where the field is wide, poles must be placed in the playing area to prevent sag in the supporting cables and some measures must be taken to prevent swaying and swinging of the light units. The absence of walls makes for some waste of light in the proper spacing of light units on the sides and ends of the field. Taking all these matters into consideration, the ideal installation calls for lighting from the side.

For lighting from the side an open type, wide angle diffusing floodlight should be used. Having a reflecting surface of diffusing porcelain enamel in combination with an inner reflector of oxidized aluminum, this reflector directs the light forward and downward with a wide lateral coverage and also takes a portion of the light and directs it to points farthest from the unit. Thus a good intensity of light is provided at the center of the playing area.



# COST DATA

field lighting. This information, in case the contractor is called upon to make recommendations, will be found very helpful. The advisability, however, of making such recommendations is rather questionable. When a job is completed and the lights turned on, one will find that he has as many "self appointed illuminating experts" to compete with, as there are players on the field.

The layouts furnished by the manufacturers, of course, are confined to the use of equipment as supplied by the individual company. This does not always give the best results. In the case of a baseball field, a manufacturer of flood light projectors will recommend projectors throughout, while the metal reflector manufacturers will recommend his equipment for the entire job. The best results can be obtained from a combination of the two types.

Along with the development of night lighting comes the question of costs. The best that can be done is to set up some approximate costs, based on estimates, and completed jobs. There are too many variables entering in, which affects the labor cost, for anyone to try to

EVERY contractor watches with interest the growth of any new projects or developments which will increase his business. The night lighting of golf courses and other athletic fields is no exception. Although the lighting of miniature golf courses is well standardized, the other branches are more or less in the experimental stage.

Miniature courses are lighted with standard equipment, and the outlay of money is not great. Equipment required for regular athletic fields, however, is either special, or is standard equipment used for new applications, and involves large expenditures of money.

ITEMS	Req'd	Material	Labor	Total
Transformers.....	9 (5-50KVA, 3-37 1/2, 1-25 " )	2900.00	600.00	3500.00
Towers—70' Projectors—El. Lamps, 1000 W.....	21	8500.00	6200.00	14700.00
Conduit.....	380	23750.00	4180.00	27930.00
Trenching & Backfilling.....	Misc.	300.00	350.00	650.00
Remove & Replace Turf.....	12000 Ft.	3000.00	3000.00	6000.00
Splice Boxes.....	12000 Ft.	1800.00	1800.00	3600.00
Service.....	3	1100.00	200.00	1300.00
No. 1/0-1/c, L. C., 5000 V. Cable (trench).....	400.00	200.00	600.00	
No. 6-1/c, L. C., 5000 V. Cable (trench).....	2000 Ft.	2500.00	360.00	2860.00
No. 4-1/c, L. C., 5000 V. Cable (trench).....	3500 Ft.	700.00	420.00	1120.00
No. 4-1/c, 600 V. Pkwy.....	4200 Ft.	4180.00	840.00	5020.00
No. 1/0-600 V. Pkwy.....	2100 Ft.	1300.00	315.00	1615.00
Miscellaneous.....		400.00	500.00	900.00
Job Cost (Cartage, Ins., Etc.).....		350.00		350.00
Totals.....		46,380.00	19,055.00	65,435.00

Owners are reluctant to spend such large sums without some assurance that the lighting is going to be satisfactory and the return on the investment good.

The manufacturers of steel reflectors and flood lighting equipment have laid out many schemes for athletic

ITEM	Quantity	Cost to Customer		
		Material	Labor	Total
Transformers—50 K.V.A., Towers—90'0" High with Conc. Base.....	3	1080.00	240.00	1320.00
Steel Pole 40'0" High with Conc. Base.....	6	2760.00	2160.00	4920.00
Projectors—1500 W.....	2	130.00	75.00	205.00
Elip. Angle Reflector—1000 W.....	96	9500.00	2000.00	11500.00
Lamps—1500 W. for Proj., Lamps—1000 W. for Refl., Cir. Brkr.—5000 V. Pole Type—Oil.....	4	38.00	20.00	58.00
Panel & Cab.—Main Dist., Panel & Cab.—Tower Br. Fuse.....	100	900.00	25.00	925.00
Cable Support & Splice Boxes.....	4	16.00	1.00	17.00
2 1/2" Galv. Cond.—on Towers.....	1	255.00	140.00	395.00
3" Galv. Cond. on Towers.....	1	320.00	100.00	420.00
No. 1/0-1/c, 4000 V. L. C. Cable.....	6	240.00	160.00	400.00
No. 1/0-1/c, 600 V. Pkwy. Cable.....	12	120.00	60.00	180.00
No. 1/0-1/c R. C. Cable.....	600 Ft.	288.00	330.00	618.00
No. 12-1/c, 600 V. Pkwy. Cable.....	200 Ft.	130.00	100.00	230.00
No. 12-1/c W. P. Flexible Cord.....	230 Ft.	225.00	50.00	275.00
Trenching & Backfilling.....	1600 Ft.	1450.00	320.00	1770.00
Turf—Remove and Replace.....	1900 Ft.	320.00	200.00	520.00
Sundry Items.....	300 Ft.	33.00	30.00	63.00
Job Cost—Cartage, Drwgs Etc.....	500 Ft.	85.00		85.00
Totals.....	1700 Ft.	425.00	425.00	
	1600 Ft.	200.00	200.00	
		250.00	250.00	
		150.00		150.00
		18,290.00	6,886.00	25,176.00

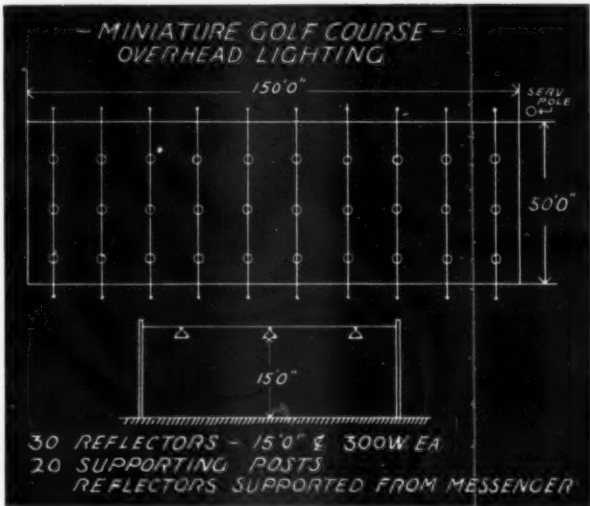


A study and division of costs for material and labor for various types of outdoor sport lighting.

By RAY ASHLEY

Chief Estimator and Engineer,  
Electrical Survey Bureau, Inc., Chicago

# for Outdoor Sport Lighting



MINIATURE GOLF COURSE—50'x150'—OVERHEAD LIGHTING DIVISION OF APPROXIMATE COST (Cost to Owner)				
ITEMS	Req'd	Material	Labor	Total
Post Sets & Mess. Wire...	10	133.00	282.00	415.00
Reflectors—300 W.....	30	122.00	47.00	169.00
Conduit—Underground— 3/4".....	200 Ft.	21.00	30.00	51.00
Wire—No. 12 L. C.—in Conduit.....	600 Ft.	14.00	12.00	26.00
Wire—Overhead—No. 12 & No. 8.....	1300 Ft.	88.00	135.00	223.00
Service Pole—Planked.....	1	30.00	22.00	52.00
Service Drop—3 No. 6, 1 1/4" c.....	1	15.00	23.00	38.00
Metering—60 Amp.....	1	14.00	11.00	25.00
Cabinet—8 Cir.....	1	25.00	13.00	38.00
Miscellaneous Costs.....				135.00
Totals.....		462.00	675.00	1172.00

establish any standard prices. Even the quotations on materials seem to vary greatly for different jobs.

The accompanying tables give the relative distribution of the costs, and can be used for compiling preliminary estimates, as well as for checking. All amounts shown represent cost to the owner, and labor items are based on twelve dollars a day.

To set up costs for all the branches of athletics, together with all the combinations of equipment which have been recommended, would require a great deal of space and unwarranted time. A single type of field may

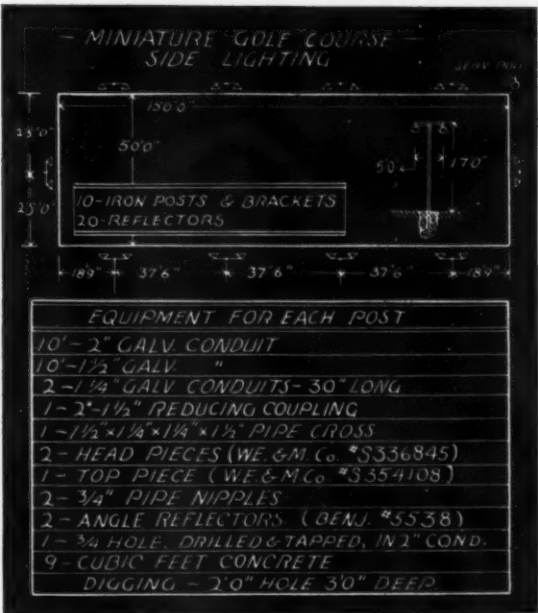
Electrical Contracting, May, 1931

vary greatly in its requirements, depending on location of grand stands, auxiliary spaces to be lighted, etc.

Regular golf course installations can vary from twenty-five to forty percent, due to length of fairways, contours, and hazards.

Under any conditions, it is necessary to make a careful layout so that the trenching, and cable will be kept to a minimum, and at the same time have the load  
(Continued on page 123)

MINIATURE GOLF COURSE—50'0"x150'0"—SIDE LIGHTING DIVISION OF APPROXIMATE COST (Cost to Owner)				
ITEMS	Req'd	Material	Labor	Total
Posts—in Concrete.....	10	163.00	203.00	366.00
Reflectors—750 W.....	20	150.00	48.00	198.00
Conduit—Underground— 3/4".....	700 Ft.	67.00	155.00	222.00
Wire—No. 12 Lead Covered.....	1800 Ft.	44.00	36.00	80.00
Service Pole—Planked.....	1	30.00	22.00	52.00
Service Drop—3 No. 4, 1 1/4" No. C.....	1	16.00	24.00	40.00
Metering—100 Amp.....	1	21.00	21.00	42.00
Cabinet—16 Cir.....	1	46.00	16.00	62.00
Miscellaneous Costs.....				135.00
Totals.....		537.00	525.00	1200.00



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# Electrical Contracting

*With which is incorporated The Electragist*

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S. B. WILLIAMS, Editor

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## Another Big Market

**I**N building this issue one of the most surprising things was the size of the market—\$44,000,000 for outdoor sports lighting in 1931.

This market has really sprung up over night. Last year miniature golf took the country by storm; but that was only one incident in the course of night sports. This year, according to plans now being made, pretty nearly everybody will be playing their favorite outdoor games at night.

When one stops to think of the amount of money involved in the lighting of a nine-hole golf course, or a bathing beach, or a race-track, or a baseball diamond, it becomes apparent that it does not take very many such jobs to run into a lot of money.

This 1931 opportunity as shown earlier in this issue exists everywhere. Wide-awake contractors will be alert to it and not let it slip out of their fingers.

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## Segregation of Bids

**O**WNERS and architects would offer no objection to the segregation of bids of subcontractors were it not for the fact that they want to deal with but one contractor. Subcontractors, on the other hand, have no objection to submitting their bids to the general contractor provided the original low bidder was awarded the work.

A way out that is expected to be mutually satisfactory to the owners and the subcontractors is being tried by the Madison, Wis., contractors. The bids of the pipe trades are to be opened by the architect two or three days ahead of the time for the general bid, and the architect selects the successful bids. These bids are to be used by the general contractor in the preparation of his bid.

In this way the shopping of bids in the pipe trades, after the general contract has been awarded, is prevented and the architect has a hand in selecting the subcontractor. It looks like a very simple, yet practical, method for handling what has been one of the worst economic conditions the contractor has had to face.

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## A Course in Liberal Economics

**E**VER since the industry started, the electrical contractor has been looked down upon as the weak and uneducated element in the industry. It was refreshing, therefore, to find more than a hundred contractors from different sections of the country giving consideration at the first annual meeting of the Electrical Guild of North America last month to fundamental problems in political and social economics. The meeting might almost be called a course in liberal economics.

It was interesting to hear these men talk of broadening their market into utility and industrial electrical construction on the grounds of being able to do the work better and more economically.

While it is, of course, too soon to say how successful the Guild will be, there can be no denial that its program is constructive. Its greatest danger perhaps will come from impatience within its own ranks. The members must remember that the program is big and must, to be successful, go forward slowly. The officers of the Guild must guard against this common pitfall of associations and keep ever before its membership those aims of the Guild which caused men to join in the beginning.

---

## The Way to a Strong Industry

**F**IFTEEN years ago the power industry was weak and it had no national program. The National Electric Light Association was in existence, but its income was limited and its activities as well.

Now, the power industry has grown so strong that it has become a major topic for discussion by Congress.

The power industry began to get what it wanted when the National Electric Light Association was placed in a strong financial position and could do things on a big scale.

The electrical contractors have com-

plained bitterly about the high-handed methods of the power companies, but they have not supported the only organization that could help them—the Association of Electragists.

Less than 10 per cent of the contractors are Electragists and their aggregate dues are less than \$30,000 a year. Give the Association of Electragists \$100,000 a year and see what would happen.

In every city a leading contractor should make it his job to round up all of his competitors and say: "For years we have spent thousands of dollars in cut prices, fighting each other, but what have we spent to fight the outside—the enemies who attack our industry? Let's spend, each of us, 4 cents a day to make the contracting industry safer and more prosperous. How? By becoming 'Electragists'."

#### Labor's Responsibility

FOR years organized labor had its attention focused on higher wages, shorter hours and improved working conditions. Today, under the stress of reduced production, labor is beginning to see that the greater thing is not the rate of wage, but the security of employment—not so much the hourly as the yearly wage.

If this be labor's new program, and it is undeniably sound economically, then labor must recognize that it has a new responsibility—the welfare and interest of the employer. When higher hourly wages was

the major plank in labor's platform, the organization knew a responsibility only towards its members.

Stability of employment on the other hand involves the extension of the market for the employer's products. To accomplish this the employers of union labor have many hurdles to leap.

Because of the publicity which has been given to higher wages, shorter hours, reduced quantity of work per man hour, independence of walking delegates, etc., the public has certain preconceived ideas which must be eradicated before some of the more extensive markets for electrical construction will be opened generally to union contractors.

In other words, the pendulum has started to swing back again. First, the employer went too far in holding labor down. Then labor took the whip seat and drove equally far in its direction. Now, there is a depression and both sides are coming to realize that no one side can accomplish its own purpose or its own ambitions without having a full regard for the other. The interests of labor and employer are identical.

If any labor is entitled to a wage higher than any other labor it must be because it is worth more, not merely because it is more strongly organized.

Union labor therefore should be more competent, more efficient, make fewer mistakes, and work more closely in the interests of the employer, if it is to enter into a broader market and thereby enjoy greater stability of employment.

#### Second Annual Tool Number

LAST year the June issue of ELECTRICAL CONTRACTING was devoted to tools. It showed the actual application of a large number of tools, most of which most electrical contractors did not know existed.

This year the June issue will again be the Annual Tool Number and will focus attention upon special tools made on the job, the care of tools, saws for electrical work, benders, and a classified directory of tool manufacturers.

The special tools made on the job should interest not only contractors but manufacturers as well; because they should indicate tools that are needed and perhaps show ideas that can be perfected. The care of tools is important if the full efficiency of the tool is to be secured.

It is doubtful if many contractors have any idea of the variety of saws that are specially adapted to some kind of electrical work. A better assortment of saws might very easily pay for itself many times over in the course of a year. The same is true of conduit benders.

But where can all of the many tools adaptable to electrical work be secured? Who makes them? This question is uppermost in the minds of many contractors and for that reason the classified directory has been built.

All in all, the Second Annual Tool Number of ELECTRICAL CONTRACTING (June) is a very practical and real contribution to efficiency and better operating methods among electrical contractors.



# Code Chats

*A Monthly Discussion of Wiring Practice and Questions of Interpretation, Presented with a View Toward Encouraging a Better Understanding of the National Electrical Code - - -*

Conducted by F. N. M. SQUIRES

*Assistant Chief Inspector, N. Y. Board of Fire Underwriters*

## Connections to Gasoline Dispensing Pumps

It does seem regrettable that a piece of apparatus designed to be used in one of the most hazardous locations met with every day and one which has been constructed and equipped in the most up to date and safe manner possible, should have its electrical safety spoiled by the connection of its wiring to the circuit.

A good proportion of the gasoline dispensing pumps used at our gasoline stations are now labelled as approved by Underwriters' Laboratories. This means that they are constructed and wired in the most approved manner. On the motor driven

dispensing pumps the Laboratories insist upon the use of a motor approved for use in explosive atmospheres, sometimes known as the "Explosion Proof Motors." This indicates the care exercised by the Laboratories.

These gas pumps are provided with a junction box for connecting the wiring of the pump to the circuit wiring and one noticed the other day will serve to show how what might have been a "perfect" job turned out to be a rather botched one.

The junction box in this case was a cast iron one, having an inlet threaded for rigid conduit. The contractor who ran the circuit wiring and the pump did not use rigid conduit but used lead covered armored cable (A. C. L.). There were two cables running into this box, and no attempt had been made to use an armored cable connector, but the ends of the two cables had been stuck into the inlet in the junction box. Of course, this would not effectively ground the pump conduit system. Also, it left the wires at this point subject to mechanical injury, just at a place where they should be extra well protected.

Many cases have been noted where the conduit run underground to supply the pump wiring, does not terminate at just the right point to later meet the junction box of the pump, and the wires have been just simply jumped between these points.

Contractors should run their conduit to meet exactly the point where the box on the pump will be and inspectors should see to it that this is done. Due to the frequent gasoline spillage and leakage, inspectors should see to it that such jobs are wired in accordance with Article No. 32.

## Heating Caused by Induction

In our February issue the statement was used that "In all cases where a common neutral (or any neutral for that matter) is used, it must be within the same armor or conduit with the wires with which it serves."

One of our correspondents calls our attention to cases where he believes this statement does not hold. To support his belief he submits some diagrams illustrated in Figures 1, 2 and 3.

In all of the above diagrams correct usage is shown and the Code has not been violated.

The diagrams show places where



**INSPECTOR HEADS LEAGUE:** Oscar M. Frykman, chief inspector of Minneapolis, Minn. has been elected president of the Electrical League of Minneapolis. He is a past president of the Western Association of Electrical Inspectors and has been inspector in Minneapolis for 21 years. Other officers elected are: First vice-president, B. E. Arntsen, electrageist; second vice-president, George Jones, electrageist; secretary-treasurer, E. L. Harris and treasurer, John Hogan.



**SAVES OWNER \$1,700 PER YEAR:** The Thompson-Bonney Co., Brooklyn, N. Y., recently did a \$5,000 modernization job for a dairy which saved \$1,700 annually in current bills. The entire plant was placed on a. c. current which eliminated 5 d. c. meters. Twenty-five a. c. motors were installed, some of splashproof design that allowed the dairy workers to clean rooms by washing down with a hose. The elevator was changed to a. c. as was all the lighting equipment. William Bonney, one of the firm's members, is shown above.



# "better than expected" that's TRICO performance!

On January 17th, one year after installing TRICO Fuses, an Electrical Engineer (name on request) wrote to us as follows:

"We had no idea that the 600 Amp. TRICO Fuses would perform nearly as well as we have experienced in our plant. Other fuses blew out four or five times a week, also burned up two or three casings. Since TRICO has been installed, there has not been a single burn-out on this particular circuit . . . We can frankly say that TRICO performance is better than expected."

See what TRICO 600 Amp. fuses saved this customer

3-600 Amp. 250-volt bare link fuses @ \$6.60 each . . .	\$19.80
260 blows for the period of 52 weeks, each blow requiring 4 150-Amp. links, a total of 1040 links @ 9c each . . . . .	93.60
2 casings per week for 52 weeks equals 104 fuses @ \$6.60 each . . . . .	686.40
600 workmen in this plant. Time out each blow—plenty. . . . .	???
Total original and maintenance cost of bare link fuses for one yr. (exclusive of production loss) . . . . .	799.80
3-600 Amp. 250-volt TRICO Renewable Fuses @ \$6.60 each . . . . .	19.80
SAVING in favor of TRICO for 1 yr. (exclusive of production gain) . . . . .	780.00



## Superior Time Lag

Originated and Pioneered by  
TRICO for 14 years.

The powder-packed element in TRICO Renewable Fuses produces a natural Time-Lag, and the copper-to-copper contacts create another money-saving factor—Reduced Watt Loss.

**And They Cost No More Than Other Renewable Fuses**

TRICO FUSE MFG. CO., 1007 W. McKinley Ave., MILWAUKEE, WIS.

# TRICO FUSES

"Powder-Packed"

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**RENEWABLE FUSES**  
Built-in Money-Saving Factors.  
Fundamentally Correct.

**FUSE PULLERS**  
For safe pulling of Fuses. Genuine shock-proof horn fibre. 4 sizes.

**KLIPLOK**  
**CLAMP FOR FUSE CLIPS**  
Reduces Resistance, Preserves Clips and Fuses. Sizes to fit all Clips.

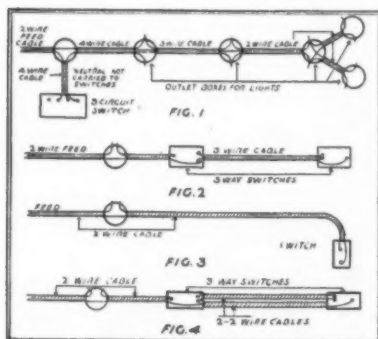
**COLORTOP PLUG FUSES**  
Tells instantly the capacity of a Fuse by its colors. 6 distinct colors.

**NON-RENEWABLE FUSES**  
Built for service, not down to a price.



**SELLS REMOTE CONTROL LIGHTING:** J. Mantin, New York, frequently does work for owners of businesses who only occasionally have a reason for going to their stock rooms, furniture show rooms, warehouses and certain types of wholesale business for example. He is frequently able to enlarge the job and make it more satisfactory to the customer by selling a remote control system that will light the entire store from the office or other convenient point.

there is no neutral wire in the same armor as the "hot" wires and it might seem that our statement quoted above was not strictly correct; but looking at the sentence we find that its subject is "it" and this refers back to "neutral" and we note from the diagrams that in any armor containing a neutral wire, there are also the wires with which it serves. Our sentence might be clarified if it was changed to read "In any armor or conduit which contains a neutral



there shall also be all the wires with which the neutral serves."

Another way to determine the correct usage of the neutral is to see to it that in all cases the a.c. current will flow in both directions simultaneously within the same armor. Now look again at the diagrams and consider particularly the switch leg (Fig.

1), which contains no neutral and note that the flow and return of the current in the switch leg is occurring within the same armor and that therefore no induction would result, and therefore no heating would be caused in the armor.

This whole matter hinges upon induction and its heating effects on the armor.

Another correspondent objects to a violation received from an inspector and submits the diagram shown in Fig. 4.

A study of this diagram shows that in one position of the three-way switches the current flows through one armor and returns through the other. In this case there would be heating of the armor due to induction. Of course in the other position of the switches the current flow is with one armor and no heating would result.

### Names for Ground Wires

In the past there has been some confusion as to grounding requirements in the terms or names applied to various parts of the equipment. For instance in the use of the term "secondary ground" some mean the conductor grounding the neutral of the supply line and some mean the conductor grounding the interior conduit or armor of a cable system.

For the sake of clarity and uniformity we should use the terms as follows:

"System grounding conductor"—meaning the conductor used to connect the neutral of the supply line to ground. This is generally found at each service.

"Service conduit grounding conductor"—meaning the conductor connecting the service conduit to ground.

"Equipment grounding conductor"—meaning the conductor connecting the interior conduit armor of cable, metal of raceways, etc., to ground.

Distinction should also be given between "grounding conductors" as defined above and "grounded conductors" which refers to the neutral wire of the distribution and interior house wiring system.

It should be borne in mind that where water pipe grounds are used the system grounding conductor may also be used for the service conduit and equipment grounding conductors when also connected to the service conduit and equipment, but that

where artificial grounds are used two separate grounding conductors each connected to its own separate grounding electrode shall be used.

Also it should be remembered that while the system grounding conductor is of a size (or capacity) sufficient to satisfy the conditions for the other two, the equipment grounding conductor may not necessarily be of sufficient size.

### Poles Required in Controller Switch

#### OFFICIAL INTERPRETATION 65

**QUESTION:** In the case of a motor normally started and stopped by means of a switch which is operated either (a) automatically by variation of temperature or pressure, or (b) by means of magnet coils energized and de-energized by pressure or temperature variation, or by push button, may the switch controlling the motor have one less number of poles than the number of wires serving the motor, whether or not one or more such wires be ungrounded?

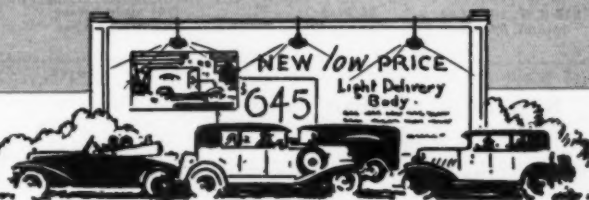
**FINDING:** The switch in this case is to be regarded as a controller and may, therefore, disconnect only such conductors as are necessary to make the motor inoperative even though the motor when not running may have voltage impressed upon it. There should be a separate disconnecting means in the motor circuit between its source of current and the controller.

Paragraph (a) of section 1204 should not be construed as applicable to the controller in question, while paragraph (f) of section 1003 is applicable only to the special conditions prescribed in the paragraph.



**TWENTY-TWO YEARS IN ELECTRICAL BUSINESS:** C. E. Colip of Colip Bros., South Bend, Ind., electrical contractors, has been in the electrical business in South Bend 22 years. At the present time he is president of South Bend Electrical Engineers' Association.

# MORE OUTDOOR LIGHTING THAN EVER



"Quad" Rectangular Angle Reflector affords straight line cut off of light. Gives equalized luminosity of high intensity over a wide area. Sizes: ranging from 6 1/4 x 8 inches, 50-100 W., to 18 x 18 inches, 750-1000 W. Horizontal Q-D Socket fitting is reversible for floodlighting.



No. 55 Support Combination clamps in any desired position on "messenger wire." Cross arm, integral with wire clamp, hanger and nipple, carries the current wires and holds the porcelain enameled socket reflector rigidly in position. Regular equipment No. 1165 V. 200 W. Reflector.

With customary foresight "Quad" engineers have met the demands for outdoor lighting with the new "Quad" No. 55 Support Combination and with the new Rectangular Angle Reflectors that are QUICK-DETACHABLE and INTERCHANGEABLE.

These two units meet all the requirements arising from the vogue of night activity outdoors — sign and building lighting, floodlighting for sports, miniature golf, used car lots, etc. Give efficient illumination over a wide area, easily installed, economical to maintain.



Write or telegraph your jobber or direct to us for details or supplies to meet your needs. Get ready for a big season!

Illustrated price sheet of new outdoor lighting units or complete catalog of entire "Quad" line mailed on request.

## QUADRANGLE MANUFACTURING CO.

30 South Peoria Street

Chicago, Illinois



# A. E. I.

## NEWS and SERVICE INFORMATION

Material for this department is supplied by the headquarters staff of the Association of Electragists, International, 420 Lexington Avenue, New York, N. Y.

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### Resolution Against Free Wiring

In accordance with the action of the executive committee of the Association of Electragists at Kansas City, the following resolution covering the policy of the A. E. I. toward the so-called free wiring with ranges and other heavy duty appliances advocated by certain power companies, has been drafted by the trade policy committee:

WHEREAS, in certain instances power companies have offered premiums to encourage the buying of electrical appliances sold by them, such combination sales being made without adequate margins covering the true value of the articles and the cost of selling, and

WHEREAS, consideration is now being given to plans whereby power companies would absorb the cost of wiring incident to the sale and installation of electric ranges and other heavy duty appliances, charging same to promotional expense;

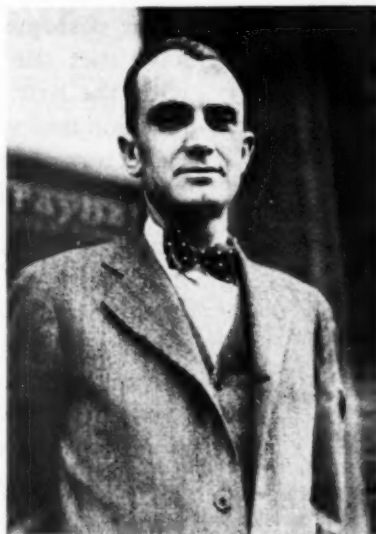
THEREFORE, Be it Resolved by the Association of Electragists, International, that such sales methods are not only uneconomic from the standpoint of sound merchandising, but detrimental to the interests of industry relationships, for the following reasons, which are obvious.

1. That the sale price of any appliance sold by power companies should include a fair margin for overhead and profit added to the cost of both the device and the wiring for same, and that "installed complete" prices quoted to customers should cover such adequate margins for both the device and the wiring.

2. That so-called free wiring offers on heavy-duty appliances sold by power companies seriously react against the normal relations of electrical contractors

with their customers, where proper charges are made for wiring.

3. That the giving of premiums or the absorption of installation expense is a form of price cutting which tends to create the impression, with the public, that the usual sale prices for appliances



**SPREADS GOSPEL OF COOPERATION:**—D. B. Clayton, of the Mill and Mine Construction Co., Birmingham, Ala., carries on a substantial business in large commercial work and heavy construction. In addition he is secretary of Birmingham Chapter, A. E. I. He has done his full share of the good work in that city for better conditions, particularly as concerns the relations with Alabama Power Co., which is increasing its efforts to see that the contractors get more business. Mr. Clayton's new office is 844 Martin building.

include abnormally large profits, or that the losses arising from such concessions are charged to utility operations.

4. That other merchants marketing electrical appliances resent such merchandising policies on the part of power companies, thereby jeopardizing friendly intra-trade relationships.

5. That the practical and economic value of most standard electrical appliances offered to the public at the prevailing low prices justifies the highest respect of the industry, and as such does not admit of any sort of an apology as a substitute for intelligent salesmanship.

### Data on Overhead Costs

Standard report forms for returning statements of business operations and overhead analysis for 1930, have been sent out to all electragists from the A. E. I. headquarters office.

Each year an increasing number of these confidential operating statements are filed voluntarily by members, representing a diversity of sizes and types of businesses and experience in widely separated areas throughout the country.

The reports submitted are carefully compiled at headquarters under competent auditing counsel and the results tabulated, showing classification by sales volume and average operating factors in percentages, such as ratios of overhead expense to prime cost, to labor cost and to sales billed; and similar ratios for gross margin and net profit.

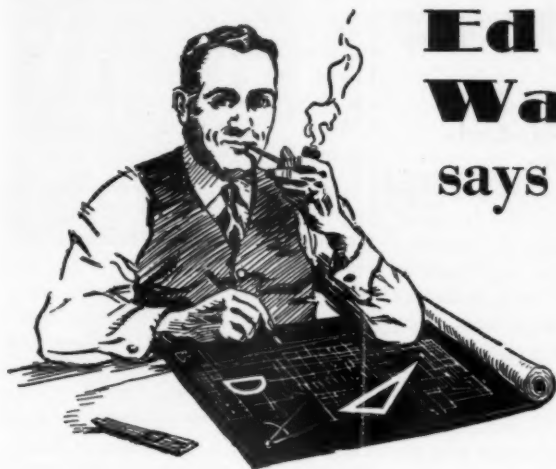
The resulting tabulations, in convenient circular form, such as appeared in the November, 1930, issue of ELECTRICAL CONTRACTING, are released as soon as completed to all members of the A. E. I. The value of these figures, properly used, as a guide to contractors in planning their current operations can not be over-emphasized. They are the basis frequently for proving fair charges in disputed accounts, for determining proper discounts on materials and merchandise and in giving the whole industry a true picture of operating costs for electrical contracting.

### Appliance Distribution Survey

A national survey of retail and wholesale distribution of electrical appliances is being conducted under the auspices of the Bureau of the Census, U. S. Department of Commerce.

The A. E. I. was represented at a recent conference called by the





## Ed Ward says



*and what Ed says in his regular talks in the Edwards Line will certainly help you avoid lots of trouble*



[This is Ed's article from the March issue of the Edwards Line.]  
[Send the coupon below for your regular copies.]

**ONE** contractor writes me that when he puts a hand reset annunciator in the kitchen and an extension bell on the second floor and one on the third floor, connected to the buzzer in the annunciator, he can't get the extension bells to ring well, if at all. I guess all of us lost sleep over this until we learned what the trick is.

You see, the buzzer on the annunciator is in series with the drops and when you add extension bells you naturally need more current for their operation, but as you still have to go through the resistance of the drop the current passed is limited. Reducing the drop resistance is inconvenient to do on the job.

The first guess, of course, would be to boost the voltage, but this becomes dangerous because you might burn out the drop and the buzzer contacts too.

The next guess is to increase the resistance of the extension bells—and here's where you've got to be careful. For a couple of bells it would be all right, but don't forget that for each bell you add in multiple you *decrease* the resistance in *series with the drop*, so that with each additional bell you put more current through the drop and this will likely burn it up.

The answer is that on standard Edwards' annunciators you are safe in adding up to two standard resistance bells or buzzers, but—aside from safety, you've got to consider good operation—and here's the trick. On standard Edwards' annunciators you'll find a little resistance coil shunted across the buzzer because many times the buzzer vibrates so fast that the current supply to the drop is broken too quickly to let it operate and this shunt takes care of that. If you add two standard bells and don't get good operation, remove the shunt resistance from the annunciator because the added re-

sistance of the extension bells will take its place and the removal of the shunt will pass more current to the extension bells.

Of course, the real trouble-proof way to do it is to use multiple contact pushes like our No. 260 so that you can have a direct line to each bell, and this in fact is the only satisfactory way to do it if you want more than two extension bells.

No matter how you do it, you must remember that you can't expect much from the ordinary bell ringer transformer so always use a 50-watt transformer for annunciator work. With the added resistance of wire to the extension bells and the bells themselves you may even need more than 50 watts sometimes. And don't forget that the curse in most all of these jobs is too small wire—stick to No. 18 or larger.

If this isn't clear to you, don't hesitate to drop me a line and I'll send you a wiring diagram.

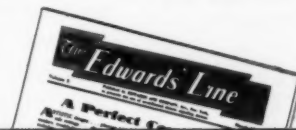
## EDWARDS and COMPANY

140th and Exterior Sts.

INC.

NEW YORK, N. Y.

### Clip and Mail Coupon



EDWARDS and COMPANY, 140th and Exterior Sts., New York

Yes, I'll be interested to hear more of ED WARD'S signaling experience. Send me regular copies of the Edwards Line.

Name.....

Street.....

City and State.....

Bureau to determine the form in which the electrical industry desired the data to be collected and compiled. Standard forms have been prepared for the submitting of confidential reports by individual retailers and wholesalers from which accurate current statistics of electrical appliance sales may be compiled and periodic reports made available to the industry.

To expedite handling the returns, the country has been divided into nine major "trading area" divisions. All electrical retailers and wholesalers who can be circularized from available Census Bureau lists will be requested to return the information promptly.

Dr. McFall of the Census Bureau, under whose direction the work is being done, has pointed out the need for a large number of representative returns in order to make the project of greatest value. This data, when compiled and released to the industry, can be a valuable guide to retailers in analyzing their local and individual marketing problems. Electrical contractors and retailers are urged to cooperate with the U. S. Department of Commerce by filing

an accurate report on their business as promptly as possible upon receipt of the standard forms from the Bureau of the Census.

### Panelboard Standards Available

Under a special arrangement between the A. E. I. and the National Electrical Manufacturers' Association, the new thirty-two page booklet "NEMA Panelboard and Distribution Board Standards" has been made available to electragists.

This publication is a compilation of standards prepared with the co-operation of leading manufacturers of switchboards, panelboards and related equipment, dealing with basic standards of their design and construction. It contains tables of current-carrying capacities of main buses, switches and fuses on two- and three-phase circuit panelboards for lighting, and a list of terms and definitions relating to these products.

Electragists may secure these Standards at fifty cents per copy by sending their orders directly to the A. E. I. headquarters office, 420 Lexington Avenue, New York City.

### New Chapters

A. E. I. charters have been granted to new chapters organized in Harlingen, San Benito and adjacent territory in Texas, and in Champaign, Urbana, Jacksonville, Peoria and Springfield, Illinois.

Chapter officers elected for the year are as follows: Lower Rio Grande Valley: K. E. Hallman, president, 222 N. Sam Houston St., San Benito, Texas; Ernst Barth, secretary, 217 E. Harrison St., Harlingen, Texas. Champaign-Urbana: John Hughes, president, 11 E. University Ave., Champaign, Ill.; C. C. Crow, secretary, 403 W. Springfield Ave., Champaign, Ill. Morgan County: Paul Trabue, president, 621 Hardin St., Jacksonville, Ill.; B. R. Hieronymus, secretary, 221 S. Sandy St., Jacksonville, Ill. Peoria: Joseph R. Downs, president, 217 Commercial Bank Bldg., Peoria, Ill.; Louis B. VanNuys, secretary, 238 S. Jefferson St., Peoria, Ill. Springfield: Frank C. Bishop, president, 311 East Monroe Ave., Springfield, Ill.; Wm. R. Schnirring, secretary, 418 East Adams St., Springfield, Ill. Six other towns have filed charter applications.

## NEW MEMBERS

The following applicants have been accepted into the A. E. I. since the publication of the list in the March issue:

#### CALIFORNIA

Orange:  
Orange Elec'l Service

#### FLORIDA

Miami:  
Jones Elec. Service Co.

#### ILLINOIS

Champaign:  
Cecil C. Crow  
Standard Elec'l Co.

East St. Louis:  
McKane Elec. Co.

Jacksonville:  
John M. Doyle  
Hieronymus Bros.  
C. F. Jones  
J. C. Walsh Elec. Co.

Peoria:  
John Bornholdt  
Jos. R. Downs Elec. Co.  
Central Elec. Co. of  
Peoria  
J. C. Schaefer Elec. Co.  
South Side Elec. Co.  
Stapp Elec. Co.

Springfield:  
Capital Elec. Co.  
Haenig Elec. Co.  
Hinkle Elec. Co.  
Meyer Elec. Co.  
Meador Elec. Co.

#### INDIANA

New Albany:  
Geo. W. Heinz Elec. Co.

#### IOWA

Cedar Rapids:  
Heinze Elec. Co.

#### KENTUCKY

Louisville:  
Althaus Bros. Inc.  
Bowling Elec. Co.  
Hardt Elec.  
Robert J. Heffernan  
Henderson Elec. Co.  
Kentucky Elec. Repair  
Co.  
A. L. Langley  
Henry L. Myers  
Ochs Elec. Co.  
The Right Elec. Co.  
J. W. Russell Elec. Co.  
A. M. Tanner  
F. F. Valinoti  
J. J. Vollmer  
Fred L. Veth  
A. Westphal

#### LOUISIANA

New Orleans:  
Busy Elec'l Wks.  
Gulf Electric, Inc.

#### NEW YORK

Callicoon:  
Joseph Cucci, Jr.  
Davidson's Elec. Shop

Ferndale:  
Bernard Deutsch

Jeffersonville:  
Brand & Co.

Liberty:  
Sam Leibowitz  
Clifford Ray  
Joseph Wiener

Livingston Manor:  
Arthur E. Schleiermacher

Narrowsburg:  
Albert W. Heins

North Branch:  
J. M. Schmidt & Sons Co.

Youngsville:  
Harold Flaccus

#### OHIO

Canton:  
Gremminger & Patrick  
Elec. Co.

North Canton:  
North Canton Elec. Shop

#### TENNESSEE

Memphis:  
Green Elec. Co.  
White Elec. Co.

#### TEXAS

Brownsville:  
The Elec. Shop  
E. P. Ellis Elec. Shop

Corpus Christi:  
Blount Elec. Co.  
Harrell Elec. Co.

Harlingen:  
Barth Elec. Co.  
Matz Elec. Co.

Raymondsville:  
City Elec. Shop

San Benito:  
Hallman Elec. Co.

#### WISCONSIN

Madison:  
Robert J. Nickles

Milwaukee:  
Graham-Lemberg Elec.  
Co.  
Good Elec. Co.  
Lisch Elec. Co.

West Bend:  
Reimer's Industrial Elec.  
Serv.

#### CANADA

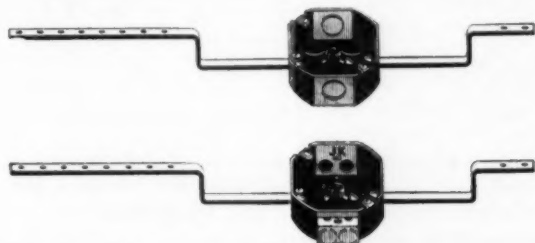
Toronto, Ont.:  
Building Repairs & Alter-  
ations Ltd.



## NEW BOXES and HANGERS THAT CUT INSTALLATION COSTS

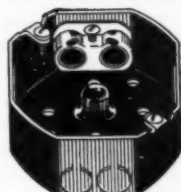


The above illustration shows how lugs formed from the bottom of the box surround the bar in the new A-S-E "REDDY-SETS". Actual tests show these lugs to be stronger than the bar itself. The wedge-shaped nut for "setting" the box is also shown.



### A-S-E "Reddy-Sets"

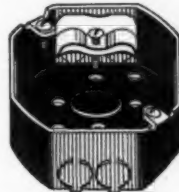
A-S-E "REDDY-SETS" have a new, exclusive "Quick-Set" feature which does away with the unhandy lock-nut on the stud. All the wireman does to "set" the box in the desired position on the bar is to draw up the wedge-shaped nut shown in the illustration at left. A few turns of the screw on the inside of the box does the trick. All that's needed is a screw-driver. This screw is staked slightly to prevent its falling out during installation—but it can easily be removed if desired without damaging the threads. The stud is not a part of the bar, but is drawn from the bottom of the box.



No. 33—BXS



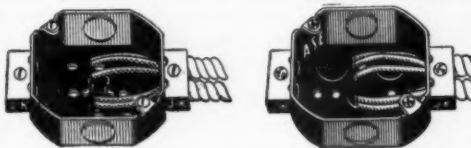
No. 13—XCS



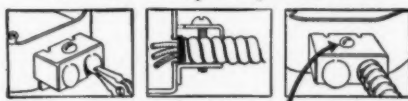
No. 30—LX

### A-S-E Cable Boxes

A-S-E Cable Boxes are 1½" deep, and are supplied with "LUG" Knockouts (for cable) in each of two sides. There are 13 different boxes—having four different types of cable clamps—and with various knockout arrangements to meet standard installation requirements.



### A-S-E Jay-Kay Boxes



Here's another new time and money-saver for the electrical contractor. These new A-S-E Outlet Boxes with two Jay-Kay Clamps outside eliminate entirely the time and cost of installing connectors. They provide more room inside for wiring and splicing. Knockouts are easy to remove with a pair of pliers. Clamps are securely riveted to box, insuring positive bond. One screw securely locks either one or two cables. Peepholes in clamp hood permit easy location of ABC bushing. Supplied in both 3¼" and 4" octagon types, with or without fixture stud.

### Other A-S-E Electrical Products

Switch Boxes  
for Rigid Conduit  
Non-Metallic  
Cable

Armored Cable

Outlet Boxes  
Round, Square,  
Octagon

Cable Boxes

Jay-Kay Boxes  
with clamps  
outside

Cutout Boxes  
and Cabinets

Pull Boxes

Wiring Troughs

All types and  
sizes

Concrete Boxes

Handy Boxes and  
Covers

Ceiling Boxes and  
Plates

Outlet Box Covers

Extension Rings

Bar Hangers

Special Boxes

Reddy-Sets

FITTINGS

Locknuts and  
Bushings

Box Connectors

Fixture Studs

Entrance FITTINGS

Pipe Straps

Miscellaneous

Conduit Fittings

Entrance Switches

Circuit Boxes

FUSE-CABS

2 to 24 Circuits

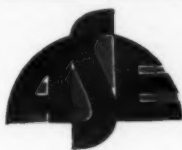
Flush and Surface  
Types

—with or without  
provision for  
Branch-Circuit  
Switches

## ALL-STEEL-EQUIP CO.

(Incorporated)

336 John Street, Aurora, Illinois





## In the Editor's Mail



### Opposed to Free Range Wiring

Editor,

ELECTRICAL CONTRACTING:

On page 22 of the April issue of ELECTRICAL CONTRACTING, you have an item on Free Range Wiring. This is a vicious practice and should be curbed by law in all states. I have found that anything I ever got free I paid well for it in the end as is the case in this matter.

Where the lighting companies do free wiring just as you say the work is usually skimped and miserably done much against the best interests of the ultimate customer. The cost of this work is usually charged out by the lighting company to promotional work. This cost is then taxed against every customer using their service plus the rate of net profit allowed by the public utilities commission in the state in which the lighting companies are operating. Therefore, you see you are not getting anything free, but in the long run you are paying for it on your light bill.

This also brings us to the greatest problem confronting the legitimate electrical contractor dealer that is the problem of unfair competition by the lighting companies. The lighting companies are able to do a very large merchandising business at a loss and charge that loss off as promotional work and pay for it out of the proceeds of their protected monopoly plus the percentage of net profit the public utilities commission may allow them.

This puts the legitimate electrical contractor dealer to a great disadvantage as he has no one to turn to pay his loss if he attempts to do

business on the same basis with the lighting company and is most discouraging to the electrical contractor dealer and is almost ruinous in many cases. Such a condition I believe as a matter of common justice should be illegal.

The second extremely unjust situation caused by these tactics appears in the fact that the lighting companies really do not pay this loss themselves. It is really taxed on every customer of electrical power on their lines and not only the loss is taxed to the customers but also the percentage of net profit allowed by the commission.

Lighting company executives advance the argument that this promotional work by increasing their load reduces the rate but that argument rings untrue for the reason that they give the impression that the lighting companies are the only people competent to judge best qualities and promote sales. This we know to be absolutely untrue. The lighting companies are not even able to employ all of the intelligent and technically educated people in this country. The old argument that the public in general is not sufficiently intelligent or educated to realize what is best for them and must have it forced on them by high pressure salesmen's methods becomes very disgusting to the majority of people of this country in these days.

Due to the above conditions, the states of Oklahoma and Kansas have recently passed laws banning merchandising by public utilities companies. Several other states have such laws before their legislature. I am not a lawyer and know nothing about the constitutionality of such

laws but it is unquestionably a long step in the right direction. Something should be done to prevent lighting companies from using these very unfair methods of competition. They are greatly to the disadvantage of the legitimate electrical contractor dealer.

Many lighting companies engaged in electrical merchandising have voluntarily done away with this condition without being forced to by law but there are still many that have not. In some states the heads of the lighting companies are very influential politically and are even able to name in advance who shall be the members of the public utilities commission who are to regulate their business for the benefit of the public with the result that the business is regulated for the benefit of the lighting company instead of the public whose interest should be protected by law.

Yours very truly,

I. B. WOUNDY.

New Canaan, Conn.

### Contractors Should Be Classified

Editor,

ELECTRICAL CONTRACTING:

The thought which actuates this letter is prompted by your editorial in the February issue entitled "Ordinances Protect Public Only." The fourth paragraph of this editorial cites a certain practice which you contend is un-American. For your information please be advised that the State of Wisconsin in selecting bidders to do its highway work has graded the men engaged in highway construction into "A", "B" and "C" classes. For instance, a "C" contractor is not permitted to bid on construction projects which involve certain sums of money. Likewise "B" cannot bid on an "A" project. However, just as soon as "C" or "B" has demonstrated his ability financially and otherwise to qualify in the next or succeeding classes, he is permitted to do so.

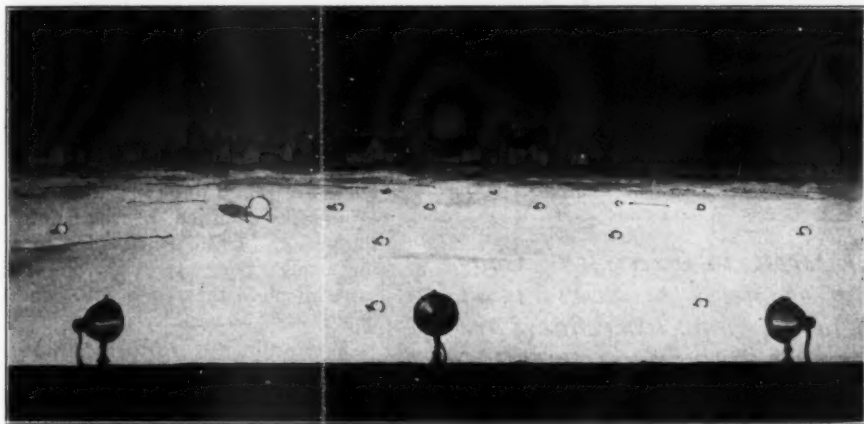
It is becoming a recognized fact in our industry that contractors should be classified in such a way as to not permit them to undertake contracts for which they are not qualified, either financially or from an organization standpoint.

R. J. NICKLES.

Madison, Wis.



# FOR GOLF DRIVING RANGES



Go after this rich field with Agalite Floodlights. Show the owners of golf driving ranges in your vicinity how they can double and in some cases even triple their revenue by floodlighting and operating their ranges after dark. . . . .

This is easy business to get if you demonstrate with Agalites. . . . .



Type 91

## *For All Floodlighting Purposes*

Order a few from your jobber, make up a list of the golf driving ranges in your vicinity and go after them. You'll find their business easy to get and plenty profitable for you. . . . .



Type  
141

THE CHASE-SHAWMUT CO.  
Newburyport, Mass.

# AGALITE

# Contracting News

*Information of Interest to Electrical Contractors consisting of items of news, short articles, practical ideas, etc., Our readers are invited to contribute to this department*

## Adequacy Recommendations For Portland

With the approval of the commission of public works of the city of Portland, Ore., L. W. Going, chief electrical inspector, has compiled and issued to architects, builders and contractors recommended minimum specifications covering the design of wiring installations and providing in each room ample circuit and outlet capacity for any normal use of electric current in that room.

The specifications cover dwelling occupancies, commercial and public buildings and industrial occupancies. The dwelling occupancies section provides for a standard load of not less than 2 watts per sq. ft. of floor area of the dwelling or apartment computed from the outside dimensions of the building or apartment.

Appliance outlets are required whenever an outlet is installed in certain specified rooms. Appliance outlets are also required every 20 lineal ft. of wall space in living-rooms, pantry rooms and bedrooms. Provisions are made for fixed appliances and services.

The commercial and public building section establishes the requirements for branch circuits, standard load for general lighting, the standard load for special lighting, standard load for convenience outlets and convenience outlet required, spacing of ceiling lighting outlets and size of service and feeders. The industrial

section establishes the scope of requirements, branch circuit requirements, standard load for general lighting, provision for convenience outlets and feeder and service sizes required.

## Guild Told Profits Must Be Protected

Protection of profits and stabilization of employment were the dominant themes at the first annual meeting of the Electrical Guild of North America held at the Wardman Park Hotel, Washington, D. C., April 20 and 21.



L. K. Comstock

## Reinspection in Fond du Lac

The Electrical League of Fond du Lac, Wis. is actively working for a reinspection of the business district that will result in rewiring about 50 percent of the installations. This group was instrumental in the drafting and adoption of the city electrical code which provides that the electrical inspector periodically shall make thorough examinations of all the electrical wires and appliances installed, and when such wires or appliances are found to be in a dangerous or unsafe condition, he shall notify the person, firm or corporation owning, using, operating or installing the same to place them in a safe condition.

The ordinance further provides that any person failing to make the repairs or changes, and have such completed within 15 days after the receipt of notice, shall forfeit and pay the sum of \$5.00 for each day which shall elapse after the expiration of said period, and the electrical inspector is empowered with authority to order the discontinuance of electrical service to such defective wire or appliances until they have been repaired.

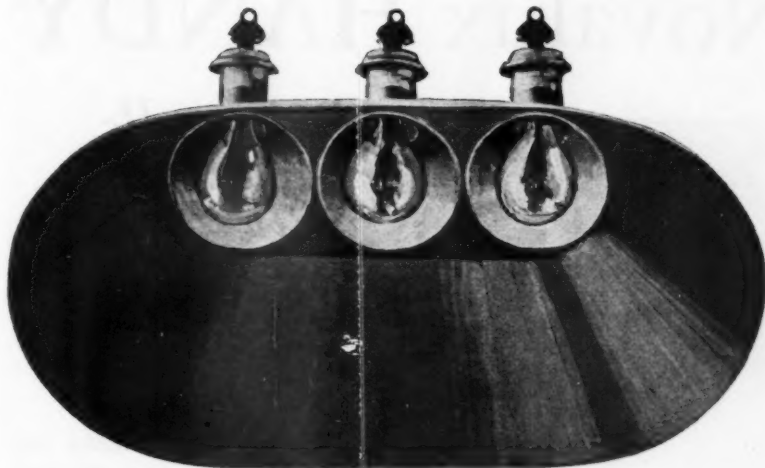
The Guild, which is composed of employers of union wiremen, now numbers 61 individuals as founder members and 204 company members. Of these 190 companies are in twelve sections, seven in unorganized territory and seven holding membership in more than one section.

The officers were reelected as follows: L. K. Comstock, president; J. W. Hooley, first vice-president; C. H. Chapline, second vice-president; Allan Coggeshall, secretary and A. C. Brueckman, treasurer.

A motion was carried to appoint a committee to work with a similar committee from the Master Plumbers' Association and from the National Association of Heating and Ventilating Engineers for the purpose of securing separation of bids for electrical, heating and ventilating work from the general contract and of establishing the principle of pre-qualification of bidders.

Because of illness John M. Gries, chairman of President Hoover's Conference on Home Building and Home Ownership was not able to be present. His paper on "Business Prog-

# DA-LITE » Pioneer in Floodlighting for bathing beaches and standard full length golf courses » » » » »



Pat. Pend.

**W**HEN you throw the switch for the first time on a floodlight installation in which you have used DA-LITE EQUIPMENT—depend on this—your customer is going to be completely S-A-T-I-S-F-I-E-D.

There is going to be more light than he expected; it is going to be more evenly distributed; there will be neither dark spots nor glaring rays, for DA-LITE is "THE PERFECT FLOODLIGHTING EQUIPMENT".

Regardless of type of requirements from the floodlighting of a small display sign to that of completely lighting a full-sized golf course, you can depend on DA-LITE to deliver satisfaction, and satisfaction means more business.

## TYPE 301

Illustrated above is the No. 301 DA-LITE Floodlight. This type recommended for large areas and long distances. Such as baseball, football, golf courses, large lakes, etc.

## TYPE 201

Type 201 (not shown) accommodates 2 bulbs. Recommended for lighting medium areas. The complete DA-LITE LINE includes a floodlight for every purpose.



Full size golf course in Kansas City, Mo., completely and efficiently lighted by DA-LITE Floodlights. (First full size 3,000 yard course in the world to be lighted.)



The new lens type DA-LITE meets all requirements of the less expensive lens type light; it is 12" in diameter and approximately 12" depth; may be mounted on pole, building or ground and is adjustable to all positions.

## DA-LITE FLOODLIGHT CO.

7400 East 13th Street

Kansas City

Missouri



# A new G-E Floodlight that will bring big profits— *It's the new* Novalux HANDY

*and it sells  
at  
\$8.40*



*G-E Novalux Handy  
Floodlight*

**T**HERE'S a big business opportunity for this light-weight, thoroughly efficient, portable G-E floodlighting projector. It weighs just 2 pounds and 14 ounces, takes a standard 100-watt inside-frosted lamp, and is easily adjustable at any angle. It was designed by G-E floodlighting engineers and the G-E Illuminating Engineering Laboratory.

*Its name—G-E Novalux Handy; and the retail price is \$8.40.*

This, in a nutshell, describes the new arrival—but twenty pages would be needed to cover all the sales possibilities. It has scores of uses where a large projector would not be justified. In suburban homes, city dwellings, garages, farms, it will be welcomed for its obvious, inexpensive protection of property and illumination of night work.

At wayside stands, parking areas, and tourists' camps, it will serve purposes of publicity as well as of practical use. And at holiday times it will furnish easy-to-use decorative lighting.

It is packed in a substantial carton, all ready for delivery to purchasers, and may be obtained from the General Electric Supply Corporation and other G-E merchandise distributors or from any G-E sales office.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

710-121

## GENERAL

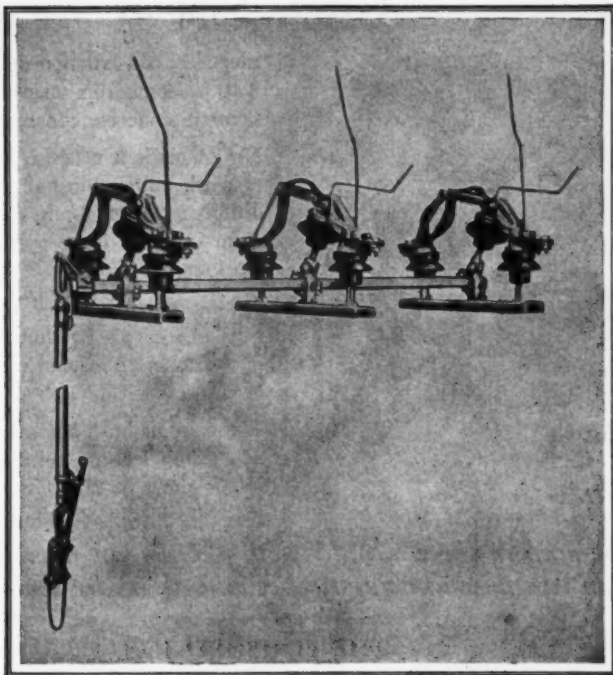


## ELECTRIC

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES



# AN OUTDOOR SWITCH For Low-Revenue Circuits



**T**HIS switch, Type TB-1, is rated 15,000 volts, 200 amperes, and is triple-pole, group-operated. Its construction includes spring-pressure line contacts because of their low resistance and their self-cleaning and self-aligning characteristics.

The TB-1 is of vertical-break design providing ample break distance and phase spacing. Positive operation of all poles is obtained by a square steel shaft. Assembled insulator units, which are comparable to line insulators rated 22 kv., are standard.

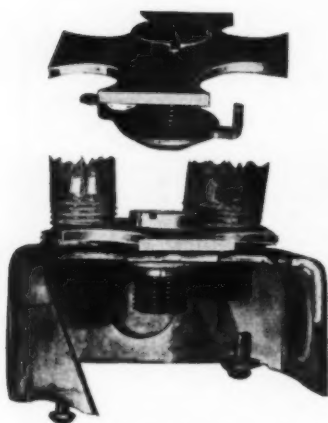
The TB-1 is a moderate-duty switch at a moderate price. It conforms to the same standards which characterize other outdoor switching equipment of General Electric manufacture. It differs only in that it is of lighter construction. General Electric Company, Schenectady, N. Y.

GENERAL  ELECTRIC  
SWITCHGEAR

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# You Can Cut Your Time and Labor Costs 75%

## With the U-B Conduit Anchor and Fixture Support



*The Original and Only Conduit Anchor on the Market*

Electrical construction men everywhere will welcome this time and trouble saver in concrete construction.

No longer is it necessary for two men to work under unusually difficult conditions to fasten conduits, only to have them knocked loose by some careless workman.

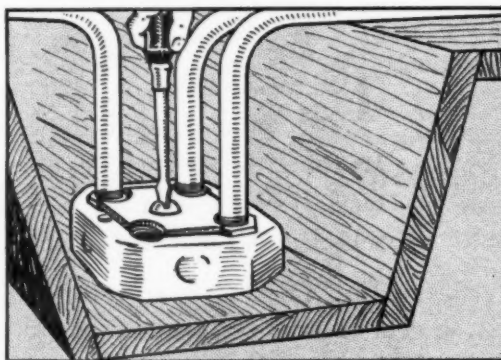
No more costly grief and waste of time to locate a conduit whose end is in the concrete instead of in the outlet box.

The conduit bushings are put in place when the wires are being pulled. The job is done but **ONCE**, and quickly, with the U-B Conduit Anchor.

***One man in three minutes with a U-B can do a Better Job than two men working twenty minutes under the old method***

### THE FINISHED JOB

Installation of costly fixture supports is eliminated with the U-B Conduit Anchor and Fixture Support. The U-B Anchor, imbedded in concrete and supported by lock nuts, provides unlimited fixture support and is installed at the same time that the conduits are anchored. This single operation saves you the usual additional labor and material required for installing Tee Fixture Supports.



*Conduits are all in place when false work is removed*

**PUT IT TO WORK FOR YOU ON THE NEXT JOB**

**CONDUIT ANCHOR CO.**

**4812 N. CLARK ST.**

**CHICAGO, ILL.**

CONDUIT ANCHOR CO.,  
4812 North Clark St., Chicago, Ill.

I'd like to learn more about the U-B Conduit Anchor—send me your illustrated folder showing installation data.

Name .....

Address .....

My jobber is .....

Address .....



**SPECIALIZES IN RESIDENCE WIRING:**—M. R. Wheeler, Mobile, Ala., contractor, has just completed one of the finest residence jobs in that city, with underground feeders, 100 amp. service, intercommunicating phones, etc. Mr. Wheeler is secretary of the Electric League of Mobile, founded by the contractors, but open to other branches.

ress through Research" was read by G. Earl Stewart, president of L. K. Comstock & Co., New York.

Victor H. Tousley, secretary of the Electrical Committee, N. F. P. A., and of the International Association of Electrical Inspectors made a strong plea for cooperation with the inspectors in developing the National Electrical Code.

C. E. Greenwood, commercial manager, N. E. L. A., briefly sketched the load building problems of the power industry and the reasons why the N. E. L. A. is paying so much more attention to improved standards of wiring adequacy.

One of the treats of the meeting was an address by Nelson B. Gaskell, ex-chairman of the Federal Trade Commission, who, in speaking against the repetition of the business cycle, stated that as we have laws to prevent prices from going too high some way should be open for legislation to protect property from depletion when prices go too low.

"There can be no continuity of employment," said Mr. Gaskell, "until you have established the profitability of industry itself. The majority of business operations must be continuously profitable for our social scale to be maintained. The public is interested not only in too high prices, but too low as well. There must, therefore, be a safeguard against

# GIANT FLOODLIGHTS

## » for every need - - everywhere

**F**ULL size, and miniature golf courses, amusement parks, service stations, bathing beaches, swimming pools, tennis courts, handball courts, parks, playgrounds, air-ports are but a few of the many spots where you can sell and install Giant Floodlight Projectors.

Giant Projector installations are easy to sell for the sole and simple reason that they have demonstrated their ability to produce business for their owners. Not in a few places but in hundreds upon hundreds of locations. Illustration after illustration in the big Giant Catalog contains convincing sales materials that will help you sell Giants. Send for it today.

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Seattle, Wash.  
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Jefferson City, Mo.  
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Woodbine, Iowa  
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—And Hundreds of Other  
Outdoor Lighting Installations

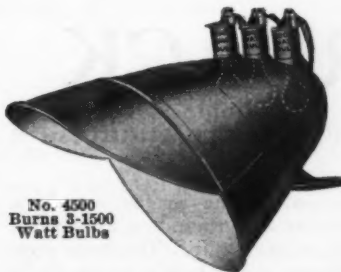
Night Tennis  
Under Giant  
Projectors.  
(Ft. Smith,  
Ark.)



We manufacture both open and closed type projectors—to take care of every outdoor lighting installation.



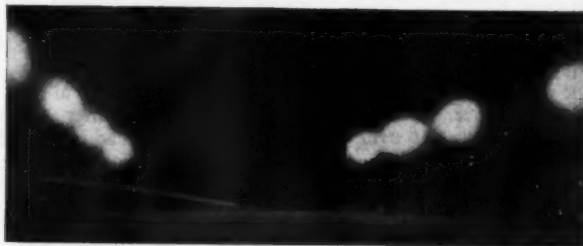
Red Top Cabin Camp, Elm Creek,  
Nebraska. lighted with Giant  
Projectors.



No. 4500  
Burns 3-1500  
Watt Bulbs



No. 1520 Gla-Flector  
Burns 1000 or 1500 Watt  
Bulbs.



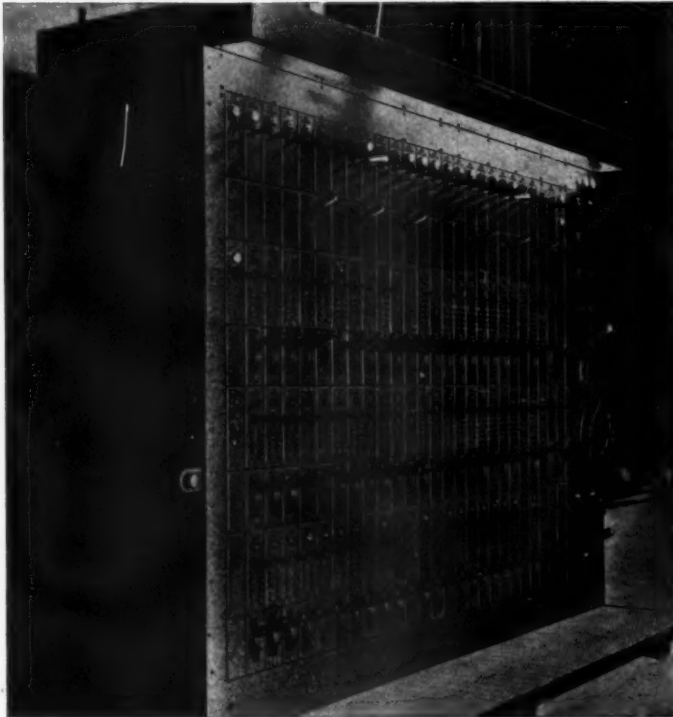
Roanoke College (Va.) Illuminated with 16 No. 4500  
Giant Projectors.

# GIANT MANUFACTURING CO.

TRENTON, N. J.    »    »    »    COUNCIL BLUFFS, IOWA    »    »    »    OAKLAND, CALIF.



## The Largest Portable Stage Switchboard in the World



Built by

# WURDACK

for the New Orleans Auditorium

The switchboard installation in the magnificent New Orleans Auditorium represents an outstanding example of Wurdack engineering and craftsmanship. The huge portable stage switchboard shown above brings to its disappearing stage a flexibility of lighting control and a command of effects second to none in the country. It is equipped with 80 control units and 100 dimmers, and has a current handling capacity of 700 kilowatts. Twenty flexible rubber covered cables, containing a total of 300 wires, connect it to the terminal cabinet. Despite its weight of over three tons, it can be readily moved to any position on the stage. May we send you our folder which fully describes this Wurdack installation?

**WM WURDACK**  
ELECTRIC MFG. CO.

4444 CLAYTON AVE., ST. LOUIS, MO.

See Sweet's catalogue for nearest branch office.

prices being forced too low to be profitable."

The same thought was expressed by L. I. MacQueen, director of the Pittsburgh Builders Supply Club, when he claimed that the practice of permitting the unfit to enter an industry and by price-cutting murder the business of those now engaged in trying to do good work must be abolished.

The subject came up again in the address by President L. K. Comstock covering in detail the aims of the Guild:

"One of the most prolific causes of cut-throat and merciless competition," said Mr. Comstock, "is to be found in the excessive number of firms everywhere engaged in the business. . . There ought to be some agency clothed with the authority to issue or to withhold a 'certificate of convenience and necessity' when a new firm enters the field. . .

"It seems to be quite lawful for the Government to commit wholesale murder by protecting with all its power the most barbaric competition, but wholly illegal for the business man to rise in his own defense. The Government can ruin an industry by fostering cut-throat competition, but the members of that industry face jail sentences if they seek to protect themselves against ruin. The Guild holds no brief for violators of the

(Continued to page 91)



**IN CONTRACTING BUSINESS 20 YEARS:** Louis H. Dieke, Hinsdale, Ill., has been in the contracting business for 20 years. In addition to taking care of his business, he is secretary-treasurer of the DuPage County Electrical Contractors' Association.





INDIAN WHITE

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LEWIS TOWER  
Philadelphia

## Building Permanent Business with Permanent Materials

**M**ORE AND MORE it is observed that lasting successes are the ones built upon the integrity of good craftsmanship and materials that are permanent. Good electrical engineering invariably requires of equipment and supplies that they will last to do honor to the building.

Mohawk contains those elements which Electrical Contractors and Builders desire in Rigid

Conduit... Heavy material for strength; impervious to acids for safety — tough, smooth, glossy finish for long life. It bends easily and threads clean and even.

Mohawk Conduit may be had in either Indian Black (enamel) or Indian White (galvanized).

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# Just *WHY* were you called in on that job?

**W**HEN the 'phone rings and you are asked in on a job of wiring . . . *don't be too sure* that all the client wants is a price on a wiring job. In most cases he wants your expert opinion, your seasoned judgment, the benefit of *your* experience on other jobs . . . in other words, a *complete, satisfactory job of wiring.*

It is by making the *proper* recommendations that contractors succeed. Check over the plans. See that your prospect is getting an adequate Safety Switch; he may judge it solely by its rating for average loads . . . and need something far different. Particularly on large buildings see that he gets "enough" Safety Switch.



"Equal to many Type A switches" is the general opinion of the Type "C" C-H Bul. 4131 Standard Duty Safety Switch. Quick make and quick break plus one-piece clips give this switch unusual life. Molded crack-proof base. Many other features plus the rugged construction typical of the C-H Line. Capacities from 30 to 400 amps., at 250 volts and 30 to 200 amps., at 575 volts.



C-H Bulletin 7920 Duplex receptacle, small and shallow, designed for easy handling and quick wiring. Parallel slots polarized. Heavy phosphor-bronze one-piece contacts, doubled to insure firm contact regardless of service and to prevent stubbing.

He may think one outlet is enough where four should be used to meet future demands. He may miss entirely other electrical needs . . . he'll thank you for calling them to his attention . . . will blame you if you don't.

To make friends and keep them, to make money, give this service. And to make sure you keep your profits, use Safety Switches, Meter Service Switches and Wiring Devices that perform perfectly and stand up in service . . . the Cutler-Hammer Line. Long-continued and widespread advertising has made your customers acquainted with Cutler-Hammer and taught them to expect a lot from C-H. Every printed promise has been kept by the product on the job.

Established wholesalers stock Cutler-Hammer Wiring Devices and Safety and Meter Service Switches. CUTLER-HAMMER, Inc., *Pioneer Manufacturers of Electrical Apparatus*, 1258 St. Paul Avenue, Milwaukee, Wisconsin.

# CUTLER HAMMER

*Wiring Devices and Safety Switches for Every Service*

(A-3986)

# Suggested RESALE PRICES *for* Wiring Supplies

The prices listed on the following pages are merely suggested resale prices for the commonly used standard supplies and equipment employed in electrical construction work. They are based on average current trade costs throughout the country, very largely obtained from jobbers' price sheets, and are also based on average overhead charges.

\* \* \*

Obviously, prices can be suggested only for the widely used products that are nationally distributed, and under no circumstances is this section intended to function as a directory of products or manufacturers.

\* \* \*

The publishers wish to again emphasize that these are merely *suggested* resale prices and while every effort is made to make them universally applicable and accurate we cannot guarantee them or assume any responsibility for errors.

\* \* \*

The prices appearing in this section will be completely revised each month as trade prices may change.

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# Suggested Resale Prices for Wiring Supplies

These are merely suggested resale prices for the commonly used products that appear regularly on jobber price lists. They are figured on generally accepted principles for computing resale prices and should cover average conditions but are not guaranteed. (See note on title page.)

## A-SUNDRIES

### ASBESTOS

Asbestos Millboard—Per Pound—30c.

### ANNUNCIATORS

#### House-Surface Type—Hand Reset

No. Drops	Ansonia Wood	Metal	Edwards No. 81 or Faraday No. 373	Edw. & White Enamel	P. & W. Competition	Automatic
2	\$ 8.25	\$11.00	\$ 9.85	\$13.00	.....	.....
3	9.35	12.45	11.00	14.80	.....	.....
4	10.90	13.60	13.05	16.40	\$13.20	\$16.50
5	12.65	14.85	.....	.....	.....	.....
6	13.60	16.10	16.40	19.40	16.50	19.80
8	16.10	18.90	19.40	22.75	19.80	24.75
10	19.00	21.60	22.75	26.00	23.10	29.70
12	21.50	24.25	25.90	29.15	26.40	.....
15	27.00	30.25	.....	.....	.....	.....
16	.....	34.60	40.00	34.65	.....	.....
20	35.90	40.85	2.25	42.90	.....	.....
Extra Drops	.....	.....	2.25	3.00	.....	.....

(All other Annunciators—Sell at List less 10%)

### COUCH

#### Electrical Reset

Number of Drops	Style D Face Type Wood Face	Style F Flush Wood Face	Style F Flush Metal Face
4	DA 4 \$21.50	FA 4 \$44.80	FA 4 \$49.80
6	DA 6 26.50	FA 6 49.80	FA 6 55.00
8	DA 8 31.50	FA 8 53.80	FA 8 59.70
10	DA 10 36.50	FA 10 58.25	FA 10 64.70
12	DA 12 43.10	FA 12 64.25	FA 12 71.30
15	DA 15 50.00	FA 15 73.10	FA 15 81.50
16	DA 16 56.50	.....	.....
20	DA 20 69.75	FA 20 88.15	FA 20 98.00

Add for each drop on any of above—\$4.15 per drop

### ADAPTORS & REDUCERS

#### For Sockets and Vases

	Arrow	Benj. Bryant	G. E.	Hubbl.	Price
Mogul to Medium	292	98	421	070	\$0.50
Medium to Candelabra	392	.....	392	35699	.25
Candelabra to Miniature	391	.....	391	.....	.20
Medium to Intermediate	492	.....	9691	2644	.492
Parallel Blades to Edison	.....	1006	.....	682	.424
Plug in Pull Socket	35024	.....	35024	.....	1.90
Vase Adapters, Benjamin No. S, 831, 832, 833—Each	.....	.....	.....	.....	2.00
Two-Light Vase Adapter, Brush Brass or Gun Metal, Complete with Pull Sockets, Plug, 6 feet Silk Cord—Rodale No. V-41	.....	.....	.....	.....	4.00

### EXTENSION ARMS FOR PULL SOCKETS

For Brass or Porcelain Sockets with 8"—10"—12" or 14" Reflex	\$0.65
16"—18" or 20"	.70

### ADJUSTERS

#### For Cords

	Price
Universal Cord Adjuster Standard Size No. 1417 3/4" Long	\$ .10
" " " Factory No. 1418 5/8" Long	.15
" " " Reinforced No. 1419 5/8" Long	.20
Ball Type No. 1403 & 5 for Type C Cord. 3/4 hole	.10
No. 4634 & 5 for Reinforced Cord. 3/4 hole	.12

### ACORNS & TASSELS

Luminous Acorns and Pendants for Pull Chain	\$0.30
Brass Acorns and Tassels for Pull Chain	.10
Brass Acorns Adjustable for Linen Cord	.10
Insulating Link for Pull Chain	.15

## BOXES, SWITCH

### SECTIONAL SWITCH BOXES

#### Single Gang—For Switch and Recep. for Old or New Work

For Loom	Depth	Without clamps	Black	Galvd.
.....	2, 2 1/4 or 2 3/4"	.....	\$.18	\$.20
For BX Cable	2 1/4 " 2 3/4"	With " "	.18	.20
" " " "	2 1/4 " 3"	With " "	.32	.35
For Rigid Conduit	1 1/2 to 2 3/4"	Without " "	.19	.21
" " " "	3 & 3 1/2"	Without " "	.32	.35
Spacers—For Spacers only deduct from any of above prices	.....	.....	.04	.05
Kruse Sw. Box Supports—G. E. No. 6610—16 1/4" Long	.....	.....	.....	.20

#### With BRACKETS or EXTENDED EARS or LATH SUPPORTS For New Work

For Loom	Depth	Without clamps	Black	Galvd.
.....	2, 2 1/4 or 2 3/4"	.....	\$.22	\$.25
For BX Cable or Loom	2, 2 1/4 " 2 3/4"	With " "	.25	.28
" Rigid Conduit	2 to 2 3/4"	Without " "	.31	.34
" " " "	.....	.....	.26	.29

### SOLID GANG BOXES—GALVANIZED

	2 Gang	3 Gang	4 Gang	5 Gang	6 Gang	7 Gang	8 Gang
Price of Box... \$	.85	\$1.20	\$1.60	\$2.15	\$4.15	\$6.25	\$6.65
Price of Cover..	.40	.60	.80	1.00	1.95	3.45	3.85

### TANDEM SWITCH BOXES

Loom, BX or Conduit	2 Gang	3 Gang	4 Gang	2 Gang	3 Gang	4 Gang
Tandem Boxes 1 1/2 & 2" Deep	\$.68	\$1.10	\$1.63	\$.81	\$1.23	\$1.90
" " " " 2 1/4 & 2 3/4"	.81	1.23	1.90	.95	1.37	2.18

### DOOR SWITCH BOXES

For Rigid or Flexible Conduit without Clamps	Black	Galvd.
with Clamps	\$.60	\$.65

### LAUNDRY BOXES

Gem-Appleton or Raco, etc., with Single Receptacle	Black	Galvd.
Duplex	\$1.10	\$1.25
.....	1.25	1.35

For Concrete Boxes See Page PL-5.

For Solid Gang Boxes See Page PL-5.

## BOXES & COVERS, OUTLET

### CEILING BOXES, ROUND

Universal Nos.	Size and Description	Depth	Knockouts Bottom Side	Price Black Galvd.
36115	3 1/2" With Lugs	1 1/2"	3-1/2" & 4" Loom	\$0.10 \$0.12
36116	3 1/2" No	1 1/2"	3-1/2" & 4"	.08 .10
36125	3 1/2" With	1 1/2"	3-1/2" & 4"	.14 .16
36126	3 1/2" No	1 1/2"	3-1/2" & 4"	.12 .14
36716	3 1/2" Flat Plate with Clamps	1 1/2"	3-1/2" & 4"	.09 .11
56111	4" With Ears	1 1/2"	5-1/2" or 3 1/2" K.O.	.11 .13
56112	4" No	1 1/2"	5-1/2" or 3 1/2" K.O.	.07 .10
56115	4" With Ears-Loom & Cond.	1 1/2"	3-1/2" & 6" Loom	.12 .15
56116	4" No	1 1/2"	3-1/2" & 6"	.09 .11
56121	4" With Ears	1 1/2"	5-1/2" or 3 1/2" K.O.	.14 .17
56122	4" No Ears	1 1/2"	5-1/2" or 3 1/2" K.O.	.11 .13
56125	4" Ears-Loom & Conduit	1 1/2"	3-1/2" & 6" Loom	.17 .20
56126	4" No Ears	1 1/2"	3-1/2" & 6"	.16 .18
56712	4" Flat Plate	1 1/2"	5-1/2" or 3 1/2" K.O.	.07 .09

### OUTLET BOXES, OCTAGON

Universal Nos.	Size and Description	Depth	Knockouts Bottom Side	Price Black Galvd.
24151	3 1/2" Oct.-Conduit Box	1 1/2"	1-1/2" 4-1/2"	\$0.11 \$0.13
24151	3 1/2" " "	1 1/2"	1-1/2" 4-1/2"	.13 .16
24151 FS	3 1/2" " " With Stud	1 1/2"	1-1/2" 4-1/2"	.22 .24
54151	4" Oct.-Conduit Box	1 1/2"	5-1/2" 4-1/2"	.15 .18
54151	4" " " "	1 1/2"	5-1/2" 4-1/2"	.17 .19
54151 FS	4" " " " With Stud	1 1/2"	5-1/2" 4-1/2"	.17 .19
54155	4" -Cond. & Loom B.	1 1/2"	9-1/2" 12-1/2"	.21 .25
54171	4" -Conduit Box	2 3/4"	3 1/2" 1-1/2" 3 1/2" 1-1/2"	.27 .31

COVERS  
For 3 1/4"-3 1/2"-4" Octagon or Round Boxes

			Black	Galvd.
24C-1	3 1/4"	Blank Cover Flat	\$0.05	\$0.08
24C-2	3 1/4"	Raised	.06	.09
24C-6	3 1/4"	Flat with 1/2" K. O. in Center	.06	.09
24C-7	3 1/4"	Raised with 1/2" K. O.	.07	.10
24C-12	3 1/4"	Blank Bushing	.07	.10
24C-28	3 1/4"	Spider for Switch or Receptacle	.10	.11
24C-31	3 1/4"	Raised Federal Sign	.08	.10
24C-33	3 1/4"	Flat 1 1/2" hole for other	.20	.20
24C-35&36	3 1/4"	Raised 1 1/2" hole for other	.07	.09
24C-39	3 1/4"	Flat for fluted devices	.19	.21
54C-1	4"	Blank Cover	.06	.09
54C-2	4"	Raised	.07	.10
54C-3	4"	Raised Open 1/2" Deep	.10	.10
54C-6	4"	Flat with 1/2" K. O. in Center	.07	.10
54C-7	4"	Raised with 1/2" K. O.	.09	.11
54C-12	4"	Blank Bushing	.08	.10
54C-28	4"	Spider for Switch or Receptacle	.09	.11
54C-31	4"	Raised Federal Sign	.08	.11
54C-33	4"	Flat 1 1/2" Hole for Std.	.11	.13
54C-35-6	4"	Raised 1 1/2" Hole for Ring	.08	.11
54C-39	4"	Flat for Fluted Devices	.22	.24
54C-48	4"	Raised 1/2" High Open	.08	.11

## OUTLET BOXES—Square 4" &amp; 4 1/16"

Uni- versal No.	Size and Description	Depth	Knockouts Bottom Side	Black	Galvd.
51151	4" Sq. Comb. Gas & Elect.	1 1/4"	5-1/4" 8-1/4"	\$0.18	\$0.21
51151	4" Sq. Comb. Gas & Elect.	1 1/4"	5-1/4" 8-1/4"	.20	.23
52151	4" Conduit Box	1 1/4"	5-1/4" 10-1/4"	.17	.20
52151	4" Conduit Box	1 1/4"	5-1/4" 10-1/4"	.19	.23
52171	4" Conduit Box	1 1/4"	5-1/4" 10-1/4"	.60	.60
72151	4 1/16" Conduit Box	1 1/4"	5-1/4" 10-1/4"	.45	.45
72171	4 1/16" Conduit Box	1 1/4"	5-1/4" 10-1/4"	.53	.53

## COVERS For 4" &amp; 4 1/16" Square Boxes

			Black	Galvd.
52C-1	4" Sq. Blank Flat		\$0.08	\$0.11
52C-2	4" Raised		.11	.14
52C-3	4" Raised 1/2" High Open		.14	.17
52C-6	4" Flat with 1/2" K. O. in Center		.11	.13
52C-7	4" Raised with 1/2" K. O.		.16	.19
52C-12	4" Blank Bushing		.13	.15
52C-13	4" for Rect. Switch or Recept.		.11	.13
52C-14	4" for Rect. Switch or Recept.		.12	.14
52C-15	4" for Rect. Switch or Recept.		.18	.20
52C-16	4" for Rect. Switch or Recept.		.19	.22
52C-17	4" for Rect. Switch or Recept.		.16	.19
52C-18	4" for Rect. Switch or Recept.		.18	.21
52C-19	4" for Rect. Switch or Recept.		.23	.25
52C-21	4" for Rect. Switch or Recept.		.25	.27
52C-28	4" Flat Spider for Snap Switches		.18	.20
52C-31	4" Raised for Sign Rec.		.10	.11
52C-35-36	4" Raised for Sign Rec.		.16	.19
52C-39	4" Fluted Devices		.29	.32
52C-45	4" with 2 1/4" Opening		.12	.14
52C-57	4" For French Fixture		.36	.39
52C-62	4" Single Sw. 1/4" High		.11	.13
72C-1	4 1/16" Sq. Blank Flat		.29	.33
72C-2	4 1/16" Raised		.33	.36
72C-3	4 1/16" Raised Open		.36	.36
72C-7	4 1/16" With 1/2" K. O. in Center		.36	.36
72C-12	4 1/16" 1/2" Bushing		.36	.36
72C-14-15	4 1/16" 1/2" for Switch or Rec.		.36	.36
72C-18	4 1/16" 1/2" for Switch or Rec.		.36	.36
72C-48	4 1/16" Open 1/2" High		.52	.52
Specia 1	4" Cover for One Push or Toggle Switch or Single		.20	.25
Covers	or Duplex Receptacle		.20	.25
For Red	4" Cover Two Push or Toggle Switches or Two		.34	.38
Seal Work	Receptacles or Any Combination of Two Devices		.34	.38

## EXTENSION RINGS For Octagon &amp; Square Boxes

			Black	Galvd.
25151	3 1/4" Octagon Ring—1 1/4" Deep		\$0.24	\$0.26
53151	4" or Square Ring 1 1/4" Deep		.26	.29
73151	4 1/16" Square Ring 1 1/4" Deep		.45	.50
53171	4" Octagon Ring 2 1/4" Deep		.75	.75
53171	4" Square 2 1/4"		.75	.75
73171	4 1/16" Square 2 1/4"		.70	.70

HANDY OR UTILITY BOXES & COVERS  
For Use With Rigid Conduit

Description	Universal Numbers	Price
Box 3 1/4"x1 1/4"x1 1/4" For Rigid Cond.	58151	\$0.22
Box 4 1/2"x2 1/4"x1 1/4" For Rigid Cond.	58361	.20
Box 4 1/2"x2 1/4"x1 1/4" For Rigid Cond.	58371	.22
Box 4 1/2"x2 1/4"x1 1/4" For Rigid Cond.	58371	.22
Cover Flat Steel Closed	58C1	.08
Cover Porcelain with Holes	58C5	.13
Cover for Sgle. Receptacle	58C7	.16
Cover for Duplex Receptacle	58C9	.16
Cover for Toggle Switch	58C3	.16
Cover for Sgle. Push Switch	58C3	.16
Cover for Sign Receptacle	58C3	.18
Cover for Snap Switches	58C3	.18
Cover with 1/2" K. O.	58C6	.16
Cover with 1/2" or 3/4" Nipple	58C11	.27
Cover with Bushing for Cord	58C11	.16

## CONCRETE BOXES WITH COVERS

Depth	1 1/4"	2"	2 1/2"	3"	3 1/4"	4"	5"	6"
Box & Back Plate with 1/2" Stud	\$0.27	\$0.32	\$0.35	\$0.36	\$0.40	\$0.45	\$0.50	\$0.60
Box & Back Plate less 1/2" Stud	.23	.27	.30	.34	.38	.40	.45	.55
Plate only 4 1/2" Diam. without Fixture Stud 3 1/4" and 2 1/4" K. O.								\$0.10
Plate only 4 1/2" Diam. with 1/2" Fixture Stud 3 1/4" and 2 1/4" K. O.								.15
Plate only 4 1/2" Diam. with 1/2" Fixture Stud 3 1/4" and 2 1/4" K. O.								.20

## SOLID GANG BOXES

	2	3	4	5	6	7	8
Galvd. Only							
Box Price	\$ .75	\$1.15	\$1.50	\$2.00	\$3.75	\$5.65	\$6.10
Cover	.38	.55	.75	.95	1.80	3.20	3.55

## BOXES, OUTLET

## NEW CODE OUTLET BOXES

Size	Stud	Clamps	Bush Plates	Price
3 1/4"x1 1/4" Round	Yes	Two	No	\$0.23
3 1/4"x1 1/4" Round	No	Two	No	.23
3 1/4"x1 1/4" Round	Yes	Two	No	.27
3 1/4"x1 1/4" Octagon	No	Two	Two	.23
3 1/4"x1 1/4" Octagon	Yes	Two	Two	.27
3 1/4"x1 1/4" Round	No	Two	No	.23
3 1/4"x1 1/4" Round	Yes	Two	Two	.23
3 1/4"x1 1/4" Octagon	No	Two	Two	.23
3 1/4"x1 1/4" Octagon	Yes	Two	Two	.27
4 1/2"x1 1/2" Octagon	No	Two	Two	.27
4 1/2"x1 1/2" Octagon	Yes	Two	Two	.32
G.E. Cable Boxes for Straight Electric or Combination No. 5200-01				.20
Hope Cable Boxes for Straight Electric or Combination No. 2 & 4 & 14				.20
Thomas & Betts No. 565-66-67-68 Standard Cable Boxes				.22
Thomas & Betts No. 553-554 Dead Ground Cable Boxes				.35
Thomas & Betts No. 160-161 Flush Wall Type Cable Boxes				.50

## BAR HANGERS FOR OUTLET BOXES

Boxes Extra	Price
(With 1/2" Fixture Stud)	Margin
(With 1/2" Stud add 5c ea.)	
Straight Bar 18" Long	\$0.23
Straight Bar 24" Long	.30
Shallow Offset Bar 18 1/4" Long	.28
Shallow Offset Bar 24" Long	.35
Deep Offset Bar 18 1/4" Long	.35
Deep Offset Bar 24" Long	.35
Straight Old Work Bar 12"	.15
Box Cleat Bar 21"	.12
Straight Saddle Bar	.20

## SET-UP BOXES WITH BARS

Size	Ears	Clamps	Bush Plates	Galvd. Price
3 1/4"x1 1/4" Round	No	None	None	\$0.30
3 1/4"x1 1/4" Round	No	Two	None	.35
3 1/4"x1 1/4" Round	Yes	None	None	.35
3 1/4"x1 1/4" Round	Yes	Two	None	.40
For New Code Boxes				
3 1/4"x1 1/4" Oct.	Yes	Two	None	.45
3 1/4"x1 1/4" Oct.	Yes	Two	Two	.50
3 1/4"x1 1/4" Round	No	Two	None	.45
3 1/4"x1 1/4" Round	No	Two	Two	.45
4 1/2"x1 1/2" Oct.	Yes	Two	None	.50
4 1/2"x1 1/2" Oct.	Yes	Two	Two	.50
For Conduit				
4 1/2" Round	No	None	None	.30
4 1/2" Round	Yes	None	None	.35

## BUSHINGS &amp; LOCKNUTS

## BUSHINGS &amp; LOCKNUTS

	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"
Locknuts—Each	\$0.01	\$0.01 1/2	\$0.02 1/2	\$0.02 1/2	\$0.05	\$0.05
Bushings—Each	.02	.02 1/2	.05	.05	.08	.08
Locknuts—Each	\$0.08	\$0.11	\$0.19	\$0.32	\$0.40	\$0.58
Bushings—Each	.10	.20	.30	.40	.88	1.40

## PORCELAIN CLAMP BUSHINGS

## "Federal" or Equivalent

No.	K. O.	Inside Size	Outside Size	Wire Size	Bushing Each	Extra Ring Each
A-1	3/4"	1 1/4"	1 1/4"	No. 10	\$0.08	\$0.04
A-1 1/2	1"	1 1/2"	1 1/2"	No. 10	.10	.04
A-2	1 1/4"	1 3/4"	1 3/4"	No. 8	.12	.04
A-3	1 3/4"	2"	2"	No. 8	.15	.05
A-4	2"	2 1/4"	2 1/4"	No. 00	.15	.07
A-5	2 1/4"	2 3/4"	2 3/4"	450 CM	.22	.10
A-6	2 3/4"	3"	3"	1 Mill. CM	.45	.12
B-1	3/4"	1 1/4"	1 1/4"	No. 10	.20	.04
B-2	1"	1 1/2"	1 1/2"	No. 10	.32	.04
K-2	3/4"	1 1/4"	1 1/4"	No. 8	.37	.05

## "MULTI" PORCELAIN CLAMP BUSHINGS

No.	Inside Size	Outside Size	For Wires	Price Each Completu
10	1/4"	1/4"	14 B & S	\$0.08
12	3/8"	3/8"	14 B & S	.12
15	1/2"	1/2"	14 B & S	.10
20	3/4"	3/4"	6 B & S	.10
30	1"	1"	2 B & S	.12
40	1 1/4"	1 1/4"	000	.20
50	1 1/2"	1 1/2"	350,000	.30
55	1 3/4"	1 3/4"	600,000	.38
60	2"	2"	1,000,000	.45

## PORCELAIN NO CLAMP BUSHINGS

## Multi- With Spring Clip, Not Threaded

Catalog No.	Multi	90A	90B	91	92A	92B
Size of Hole	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
To Fit Hole	1/4"	1/4"	1/4"	1/4"	1/4"	1/4"
Price	\$0.06	\$0.06	\$0.06	\$0.07	\$0.07	\$0.07





# FAN HANGER OUTLET

*Gives Speed,  
Strength and Beauty  
— to your Job*

The **SPEED** of the simplest, easiest-to-install fan hanger. Fits in STANDARD 4"-square outlet box. The **STRENGTH** of a 4-point suspension capable of supporting a weight many times that of the fan.

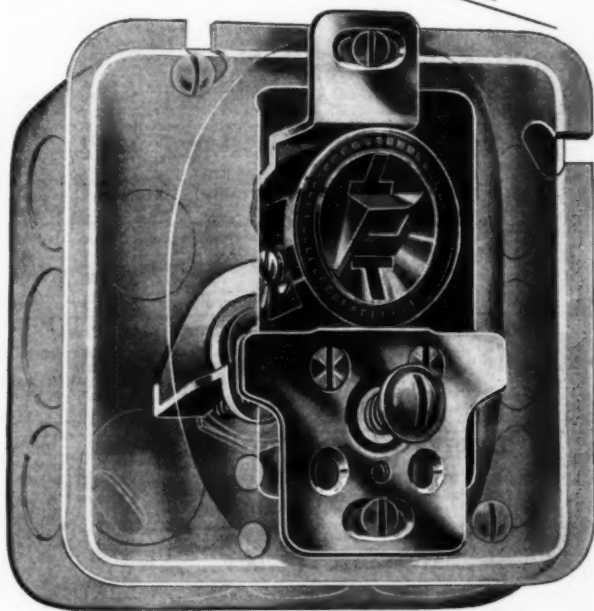
The **BEAUTY** of an all-BAKELITE Receptacle, with finding grooves to guide the plug prongs into the double-contact jaws. Brass plate completes this attractive unit which makes such a quick appeal to your customers.

For you the **Price** is extremely attractive; installation-cost surprisingly low. . .

*For Stud Mounting—No. 7751:* Twist hickey of hanger outlet firmly on stud of box. Insert long holding screws into hickey; fasten to box cover; put on plate; insert fan screw.

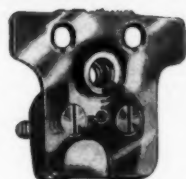
*For Clamp Mounting:* No. 7750 includes clamp illustrated at right. Two fastening screws go in mounting plate and upturned lugs hold clamp firmly against box cover.

Complete data-sheet for the asking.



*At right — Clamp  
for clamp mounting*

*Specify* No. 7751-Stud Type  
No. 7750-Clamp Type



## ARROW ELECTRIC DIVISION

THE ARROW - HART & HEGEMAN ELECTRIC CO.  
HARTFORD, CONN.



# AMERICAN STEEL & WIRE COMPANY ELECTRICAL WIRES AND CABLES

## Where Reliability Governs Choice

Although wire is but a small item in the total cost of a great structure—it is, after installation, of vital importance to efficient and economical operation. Realizing this, leading contractors and engineers choose electrical wires and cables on past records and performance. In a great majority of cases their specifications call for products of the American Steel & Wire Company. It will pay you to get all of the facts. Write us for complete information.

Pictured below is the magnificent Broad Street Station Building of the Pennsylvania Railroad, located in Philadelphia. A masterpiece of electrical efficiency, it has been wired with

**AMERITE**  
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COVERED WIRE

Architects: Graham, Anderson, Probst & White, Chicago.

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Electrical Contractors: Electro Construction Co., Philadelphia.



1831



1931

## AMERICAN STEEL & WIRE COMPANY

208 South La Salle Street, Chicago

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

And All Principal Cities

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**Y**OU can in five minutes of careful comparison know the values of **FA** Panelboards over others — yet it takes a good sized catalog to tell you. all it would pay you to know about them.

Easy to install, cost no more at first and have no maintenance cost to consider—standardized unit construction, thoroughly safety type—these are highlights.

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## Frank Adam

### ELECTRIC COMPANY

ST. LOUIS

\* and Switchboards

# Tennis is a Great Game!



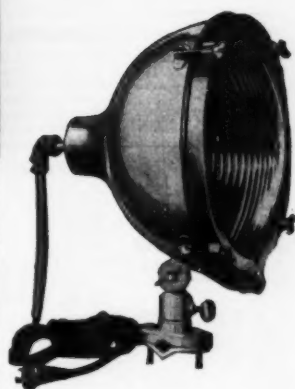
## The APPLETON is a Great Floodlight

*and this trend towards night sports and sport events is a great profit opportunity for you!*

Every day it's getting easier to sell and install floodlights . . . because more people are wanting them.

And it always has been and always will be easier to sell and install Appleton Floodlights . . . for six very definite reasons: they are simple and sturdy in construction; easily installed; fitting any surface, flat or curved; far better looking; and fully guaranteed . . . even to the reflector. They are portable, and equipped with weatherproof service cord.

It's a great set-up for you . . . especially right now at the start of the sport season. Don't wait. Write us immediately for detailed information and sales helps.



### 200 Different Known Uses

You can sell and install Appleton Floodlights for garages, office buildings, factories, homes, railroad crossings, amusement parks . . . an almost endless list. They are strong and sturdy and have nothing to get out of order. You can sell them *everywhere*.

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San Francisco—655 Minna St.      Seattle—628 Railroad Ave.



# APPLETON FLOODLIGHTS

THEY TURN NIGHT INTO DAY



# PL-6

## Boxes, Floor

THREADED COMPOSITION BUSHINGS									
Size	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
Without Locknut.....	\$ .05	\$ .11	\$ .12	\$ .14	\$ .16	\$ .30	\$ .45	\$ .80	\$ .80
With Locknut.....	.08	.14	.15	.18	.25	.45	.70	1.10	1.10
Socket Bushings									
Black Composition.....	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	3 1/2"	4"
For Sockets.....	\$ .02	\$ .02	\$ .04	\$ .04	\$ .08	\$ .08	\$ .08	\$ .08	\$ .08

## BOXES, FLOOR

### NON-ADJUSTABLE TYPE

"Full- man" robe" Steel Fullman City Mfg. Co., Co.	Rus- sell Stoll	Description	Price
477 110	2580	Comp. Out. with Std. Rec. & Bell Nozzle	\$4.00
490 100	2590	Comp. Out. with 20A. Polars. Rec. & Plug Noz.	3.50
490 100	2590	Comp. Out. Less Std. Rec. less Nozzle	2.40
491 .....	.....	Comp. Out. with 20A. Polars. Rec. & Plug Noz.	4.90
499 300	.....	Midget Out. with 10A. Recept. No Nozzle	2.25
495 .....	.....	Square Out. With 15 Amp. Rec. & Bell Nozzle	4.30
496 .....	.....	Sq. Out. With 15 Amp. Rec. & Bell Nozzle	5.40
497 .....	.....	Sq. Out. With 25 A. Rec. & Large Bell Nozzle	8.60

### ADJUSTABLE TYPE

400 120	2502	Complete-Shallow Box—Less Receptacle	\$4.30
400 .....	.....	Complete-Deep Box—Less Receptacle	5.25
401 .....	.....	Complete-Shallow Box With Receptacle	5.35
401 .....	.....	Complete-Deep Box With Receptacle	6.30
420 .....	.....	Complete Large Size Box Without Receptacle	4.90
421 .....	.....	Complete Large Size Box With Receptacle	5.95

### ADJUSTABLE GANG TYPE

441	251	2511	Single Gang Less Recept. with 1/2" Cover Plate	\$ 5.35
442	252	2512	Two " " " " " "	10.75
443	253	2513	Three " " " " " "	16.10
444	254	2514	Four " " " " " "	21.45
445	...	2515	Five " " " " " "	26.80
Extra for Brass Cover Plate and Receptacle.....Per Gang				1.25

### G. E. & T & B BOXES

G. E.	T. & B.	Description	Price
8000	8000	Utility Outlet Box Non-Adjustable.....	\$1.00
8200	1700	Two Wire Flr. " " " " " "	4.00
8220-40	1701-2	Three " " " " " " " "	5.50
8300	1703	Extension " " " " " " " "	2.75
8400	1730-60	Two Wire " " " " " " " "	6.25
8420-40	1731-61-2	Three " " " " " " " "	7.25
8500	1733-63	Telo. or Signal Floor Box Adj.-Deep or Shallow..	5.00

### "BUSHED ELBOWS"—"BULB TEES"—

#### FLOOR COUPLINGS

Bushed Elbows Iron.....	3/4"	1"	1 1/4"	1 1/2"
"Bulb" Tees.....	\$0.60	\$0.80	\$1.15	\$3.45
Floor Coupling Brass.....	1.40	1.65	2.00	4.35

## BOXES, CUTOUT

### TYPE "A" STEEL SURFACE CUTOUT BOXES

Black									
Width	Length	3"	4"	5"	6"	7"	8"	9"	10"
Side	Long	Deep	Deep	Deep	Deep	Deep	Deep	Deep	Deep
4 1/2	5	\$ .60	.....	.....	12	30	.....	\$10.75	\$12.40
4 1/2	9	.65	.....	.....	15	15	.....	2.75	4.15
4 1/2	9 3/4	.65	.....	.....	15	18	.....	3.00	4.75
6	6	.65	\$ .90	\$1.20	15	24	.....	5.70	6.50
6	8	1.00	1.00	1.40	15	30	.....	13.35	15.30
6	9	1.85	1.50	1.80	18	30	.....	4.75	5.40
6	12	1.35	1.25	1.95	18	21	.....	10.65	12.50
8	8	1.35	1.10	1.70	18	24	.....	12.20	13.00
8	10	1.45	1.25	2.00	18	30	.....	15.20	15.40
8	12	1.80	1.50	2.25	18	36	.....	17.80	19.40
9	9	1.10	1.80	2.30	18	40	.....	19.50	21.30
9	12	1.40	2.15	2.60	24	24	.....	15.30	17.40
10	10	1.70	1.50	2.35	24	30	.....	19.10	20.80
10	12	1.95	1.80	2.65	24	36	.....	22.35	23.75
10	15	2.35	1.85	3.10	24	40	.....	24.30	26.60
10	18	2.70	3.00	3.60	24	44	.....	41.35	45.30
12	12	2.25	1.80	3.00	30	30	.....	27.20	29.65
12	15	2.40	2.30	3.50	30	36	.....	41.55	47.40
12	18	.....	2.50	4.00	30	42	.....	48.85	53.00
12	24	.....	4.40	5.40	30	48	.....	56.70	61.30

For Galvanized Boxes Add 25% to above prices.

## BELLS & BUZZERS

### Ansonia

Name	No.	Description	Buzzer	2 1/4"	3"	4"	Cow or Sleigh
Ansonia	656	Sgle. Coil Non Adjust.	\$ .40	\$ .45	.....	.....	.....
Ansonia	657	Dble. Coil Non Adjust.	.50	.55	\$ .60	.....	.....
Wizard	659	Dble. Coil Non Adjust.	.90	.95	1.05	\$1.35	\$1.65
Eureka	641	Dble. Coil Adjust. Class B.....	.95	1.00	1.25	1.60	1.80
Acme	631	Dble. Coil Adjust. Class A.....	1.35	1.40	1.50	1.80	2.10
Eureka	621	Dble. Wood Box Bell	1.20	1.35	1.40	1.65	1.85
Monitor	661	Round Type Monitor	.....	.....	1.50	.....	.....
Wizard	666	Watch Case Buzzer Round	1.25	.....	.....	.....	.....
Eureka	663	Comb. Bell & Buzzer	1.00	1.00	1.10	.....	.....
Ansonia	664	Comb. Bell & Buzzer	.....	1.15	.....	.....	.....

## BELLS AND BUZZERS—Continued

### Skeleton and Weatherproof Bells

Size	2 1/4"	3"	4"	5"	6"	7"	8"	10"	12"
620 D.C. Skeleton	\$4.55	\$5.00	\$5.75	\$7.60	\$8.75	\$12.35	\$13.20	\$20.60	.....
622 D.C. Weatherproof	.....	13.00	14.65	.....	18.15	30.30	\$40.85	.....	.....
624 Wthpf. Trans. Bell	.....	16.30	17.95	.....	21.85	37.10	42.30	.....	.....

### Edwards

Name	No.	Size	Description	Price
Nubel	735	2 1/4"	Two Coil Non-Adjust.-Gray Enam. Bell	\$ .65
Dixie	736	.....	" " " " " " Buzzer	.60
Dixie	720	2 1/4"	" " " " " " Class C-Non-Adjust. Bell	.95
Combelle	725	.....	" " " " " " Buzzer	.90
Combelle	737	2 1/4"	Two Coil Non-Adjust.-Gray Enam. Bell & Buzzer	1.15
Tubell	738	.....	Dble. Coil Non-Adjust.-Gray Enam. Two Bells	1.20
Cadet	710	2 1/4"	Two Coil-Class B-Adjust. Bell	1.00
.....	715	.....	" " " " " " Buzzer	.95
.....	712	3"	" " " " " " Bell	1.25
.....	714	4"	" " " " " " Bell	1.60
.....	.....	.....	" " " " " " Cow or Sleigh	1.80
Buz-A-Bell	730	2 1/4"	Two-Coil-Class C Comb. Bell & Buzzer	1.20
Monitor	156	3"	Monitor Bell—Nickel Plated Gong	1.60
Bronz	780	1 1/4"	Nickel Watch Case Buzzer	1.25
Buzzer	16	.....	Flush Buzzer fits Standard Switch Box	2.40

### Skeleton D. C. & Transformer Inside Bells & Buzzers

Size	3"	4"	6"	8"	10"	12"
17 "Economy" Skelet. Bells	\$5.50	\$6.75	\$8.75	\$14.25	\$21.25	\$37.50
510 A. C. Transformer	9.40	10.15	18.90	23.45	41.90	48.00

### Edwards—Lungen

#### No. 13 Bells

Size	Price
1 1/4"	\$2.00
1 1/2"	1.90
2 1/4"	1.90
3"	3.00
4"	2.20
6"	9.50
Cow or Sleigh	2.25

#### No. 15 Buzzers

No.	Price
No. 0.....	\$1.85
No. 1.....	1.60
No. 2.....	1.70
No. 3.....	2.00
No. 4.....	2.20

### Partrick & Wilkins

#### Iron Box Bells

Small 2 1/4" Iron Box Bell Non-Adjust. Dble. Magnet	\$ .40
Small 1 3/4" Iron Box Bell Non-Adjustable Double Magnet	1.65
Fancy Gong Cow or Sleigh Non-Adjust. Dble. Magnet	1.85
King Monitor Bell	1.60
6" Large Iron Box Bell for Battery Current	6.50
5" " " " " " "	8.00

### Buzzers

No. 1 Small Iron Box Buzzer Non-Adjust. Dble. Magnet	\$ .40
Watch Case Buzzer Nickleled	1.10
Midget Buzzer Nickleled	1.90
Wood Box Buzzer	2.15
Flush Buzzer with Flush Plate	3.00

### Wood Box Bells

Regular Type	Price	Large Type	Price
2 1/4" Regular.....	\$ 2.20	6" Regular.....	\$ 6.50
3" " " " " " " "	2.25	8" " " " " " " "	8.00
4" " " " " " " "	2.65	10" " " " " " " "	13.25
Standard Cow or Dinner.....	3.05	5" Dinner.....	11.40
3" Dinner.....	6.20	6" " " " " " " "	13.30
3" Cow.....	8.75	5" Cow.....	14.00
4" " " " " " " "	6.60	6" " " " " " " "	16.00
4" " " " " " " "	10.00	.....	.....

### Stanley & Patterson

Name	No.	Description	Buzzer	2 1/4"	3"
Competition	400-1	Dble. Coil Non-Adjust.	\$ .60	\$ .65	.....
Eclipse	200-3	" " " " " " " "	.90	.95	\$1.00
XXX	211-18	" " " " " " " "	.95	1.00	1.25
Marlo	221-20	" " " " " " " "	1.65	1.70	1.85
Eclipse	208	Comb. Bell & Buzzer	1.25	1.25	.....
Competition	402	" " " " " " " "	1.00	1.00	.....
Midget	331-34	All Nickleled Bell	1.50	1.80	.....
P. R.	240	Watch Case Buzzer	1.25	.....	.....
P. R.	258	Monitor	.....	.....	1.80

Name	No.	Description	Bell	Cow or Sleigh
Competition	400-1	Dble. Coil Non-Adjust.	.....	.....
Eclipse	200-3	" " " " " " " "	.....	.....
XXX	211-18	" " " " " " " "	1.60	\$1.80
Marlo	221-20	" " " " " " " "	2.25	2.65
Eclipse	208	Comb. Bell & Buzzer	.....	.....
Competition	402	" " " " " " " "	.....	.....
Midget	331-34	All Nickleled Bell	.....	.....
P. R.	240	Watch Case Buzzer	.....	.....
P. R.	258	Monitor	.....	.....

### Schwarze and Liberty

Single Coil Bell or Buzzer No. 31 & 32.....	Buzzer	2 1/4"	3"	4"	Tea
T. Two Coil Bell or Buzzer No. 311-321.....	\$ .55	\$ .65	\$ .70	\$1.50	\$1.85
Combination Bell & Buzzer No. 331-333.....	.60	.50	.55	.80	.....
Flush Type Buzzer No. 31S.....	.90	.90	.....	.....	.....
.....	1.25	.....	.....	.....	.....

### SKELETON BELLS

#### Any Make

Size	2 1/4"	3"	4"	5"	6"	8"	10"	12"
Faraday.....	\$5.70	\$6.00	\$7.00	\$9.40	\$10.00	\$16.00	\$25.00	\$31.00
Faraday Elks, S. 25	5.50	6.60	7.75	8.75	14.25	21.25	27.50	.....

Electrical Contracting, May, 1931



## Push Buttons, Etc.

## Brackets for Insulators

## PUSH BUTTONS, TREADS, SPRINGS

## STANDARD PUSHES AND TREADS

Description	Ans.	Edw.	Fara.	P&W	Price
Round 1 1/4" and 1 3/4" Stamped Brass.....	506	603	SP51	29	\$0.20
Round 2 1/4" Stamped Brass.....	527	600	SP50	27	.25
Round 2 3/4" with Card Holder Stamped Brass.....	507	601	SP57	25	.40
Rectangular 4 1/2" Stamped Brass.....	604	SP54	55	.40	
Rectangular 3 1/2"x1 1/2" Stamped Brass.....	605	SP53	50	.40	
Oval 2 1/2"x1 1/2" Stamped Brass.....	606	SP55	...	.30	
Oval 4 1/2"x2" Stamped Brass.....	609	SP56	...	.45	
Pear Push Buttons—Wood or Composition.....	508	67	5-9	3	.60
Pear Push Buttons—Metal, Nickel or Brass.....	508	68	MP8	...	.85
Desk Buttons—1 1/2" Hole—Nickel.....	562	59	7A	4	.75
Desk Buttons—1 1/2" Hole—Nickel.....	563	63	...	4	.65
Desk Buttons—1 1/2" Hole—Nickel.....	563	620	5A	4	.45
High Voltage 1/2" Hole—110 Volts.....	85	...	855	2.40	
Table Clamp with Push Button.....	571	206	TC1	...	1.00
Floor Pushes Combination Nickel.....	560	235	CFP2	...	.85
Floor Treads—"Daisy" "Dixie".....	800	290	FT1	...	1.50
Wood Push Buttons.....	...	...	...	...	.20

## BAKELITE OR COMPOSITION PUSHES

Round Plain 1 1/4" Diam.....	\$0.30	Rectangular Plain 1 1/2"x3 1/4".....	\$0.40
Octagon Fancy 1 1/2"x1 1/4" Diam.....	.35	Rectangular Fancy 1 1/2"x3 1/4".....	.60
Oct. Card Holder 2 1/2"x2 1/4" Diam.....	.40	Rec. Double Card Holder.....	.85

## DESK PUSHES—COMPOUND

## With Buttons

Make and Description	1	2	3	4	5	6
Edw. #146-Bakelite Block.....	\$2.10	\$2.50	\$3.20	\$3.65	\$4.50	\$5.25
Edw. #197 Less Cord Bake.Bl.....	3.50	4.75	6.00	7.25	8.50	9.75
Edw. #197 with 6' Cord Bake.Bl.....	4.05	6.10	7.75	9.45	11.15	12.85
Edw. #190 Wood—Less Cord.....	4.00	5.35	6.80	8.10	9.40	10.80
Edw. #190 Wood with Cord.....	4.45	6.65	8.35	10.30	12.05	13.90
Fara. #4C Wood Less Cord.....	2.00	2.30	2.60	3.05	3.50	3.90
Fara. #2A Wood Less Cord.....	4.90	7.00	8.50	10.60	12.40	13.80
Fara. B.D.P. Bake. Less Cord.....	3.50	4.75	6.00	7.25	8.50	9.75
Fara. M.D.P. All Metal Less Cord.....	6.00	11.00	10.00	21.00	...	...
P&W #4 Wood Less Cord.....	2.60	2.80	3.50	4.30	4.85	5.60
P&W #5 Wood Angle Less Cord.....	...	...	...	13.00	...	13.95
P&W #12 Wood Less Cord.....	3.30	4.25	5.45	...	...	6.00

## DOOR AND WINDOW SPRINGS

Door Springs		Window Springs	
Open Circuit Door Spring.....	\$0.40	Open Circuit Single.....	\$0.60
Closed Circuit Door Spring.....	.50	Open Circuit Double.....	.85
Open Circuit Make and Break.....	.50	Closed Circuit Single.....	1.00
Open Circuit Door Trip.....	1.00	Open Circuit Transom.....	1.00

## OTHER PUSH BUTTONS

## Ansonia

Round Stamped	Price	Round Cast	Price
514 1 1/4" Loose Back.....	\$0.30	511 1 1/4" Loose Back.....	\$0.90
515 2 1/4" Loose Back.....	.40	512 2 1/4" Loose Back.....	1.00
579 1 1/2" Flush Push.....	1.00	508 1 1/2" Flush Push.....	1.00
E33 1 1/2" Flush Push.....	1.00	540 2 1/4" Loose Back.....	.60
		550 2 1/4" Loose Back.....	.85
		570 2 1/4" Loose Back.....	.75

## Other Ansonia Push Buttons, Etc.

F-33 Stamped Flush Push.....	\$0.70	545 Oblong 2 Gang for Cards.....	\$1.85
G-33 Stamped Diamond Push.....	.70	545 Oblong 3 Gang for Cards.....	2.65
521 Stamped Push.....	.75	545 Oblong 4 Gang for Cards.....	3.65
528-534 Stamped Push.....	.95	546 Oblong 1 Gang.....	1.65
536-537 Stamped Push Loose Back.....	1.00	547 Oblong 2 Gang.....	1.50
538 Stamped Oblong Push.....	1.25	548 Oblong 1 Gang.....	1.20
541 Oblong for Card.....	1.65	549 Diamond Push.....	.70
544 Oblong for Card.....	1.20	578 Diamond Push.....	.75
Combination Floor Pushes Complete.....	573		2.50
700 1 Point Wood Base Switch.....			.45

## Edwards

Round Desk Buttons	Oblong Push Buttons
621— $1\frac{1}{4}$ " Hole.....	602—2 Gang for Cards.....
622— $1\frac{1}{2}$ " Hole.....	607—Single for Cards.....
625— $1\frac{1}{2}$ " Hole.....	608—Single.....
1786— $2\frac{1}{4}$ " Watertight.....	650—Single Solid Cast Brass.....

## Partrick &amp; Wilkins

## Round Push Buttons

Stained Wood Push #2.....	\$0.15
Oak Wood Regular #1.....	.35
Oak Open, Closed and Dbl. Cont. #1.....	.65
Oak Triple Contact #1.....	.90
Cast Brass 1 1/2" Diam. #8.....	.55
Cast Brass 2 1/2" Diam. #8.....	.65

## Oblong Pushes

16 Cast Brass 4 1/2"x1 1/2" Screw Cap.....	\$1.55
31 Cast Brass 5 1/2"x3 1/2" Screw Cap.....	2.15
44 Cast Brass 4 1/2" Screw Cap.....	1.40
708 Wrought Push and Speak 1 Pce.....	1.00
907 2 Button and Card Holder.....	2.15
908 3 Button and Card Holder.....	2.95
909 4 Button and Card Holder.....	4.55

Electrical Contracting, May, 1931

## OTHER PUSH BUTTONS—Continued

## Partrick &amp; Wilkins

## Desk Push Buttons

Car Push 1 1/4" Hole Black Center.....	\$0.45
Multiple 1 1/4" Hole Black Center.....	1.35
Pony 1 1/4" Hole Black Center.....	1.85

## Pear Shape Pushes

Compound Maple 2 Button.....	\$2.00
Compound Maple 3 Button.....	3.00
Wood Rosettes for above.....	.40

## MULTIPLE PUSH BUTTONS

## Couch "Pushrites"

## With Card Holders

Number of Buttons	Wood Base Type		Flush Brass Plate Type	
	Plain Base	Weighted Base	Number	Price
4	7900	\$ 3.35	7980	\$ 3.75
6	740	4.60	789	5.20
8	7010	5.80	7990	6.65
12	7021	8.30	79010	9.60
16	7930	10.80	79020	12.45
20	793	13.30	7902	15.40
			797	21.60

## COUCH UNMOUNTED PUSH BUTTONS "WORKRITES"

No. 97 for 1 1/4" Hole.....	\$0.50
Adaptor No. 0684 for same.....	.05

## BRACKETS FOR INSULATORS

## WOOD BRACKETS

	Each		Each
1 1/2" x 2" x 10".....	\$ .07	1 1/2" x 2" x 12".....	\$ .08
1 1/2" x 2" x 12".....	.08	2" x 2 1/2" x 12".....	.10
1 1/2" x 2 1/4" x 12".....	.09	2" x 2 1/2" x 12".....	.10
		2" x 3" x 12".....	.15

## PINS

	Each		Each
Locust 1 1/4" x 8".....	\$ .06	Locust 1 1/4" x 9".....	\$ .10
Oak 1 1/4" x 8".....	.05	Oak 1 1/4" x 9".....	.08

## HOUSE BRACKETS WITHOUT INSULATORS

## Peirce

No.	Light Type	Price	No.	Heavy Type	Price	No.	Corner Type	Price
153	One	\$ .25	154	One	\$ .40	150	One	\$ .30
258	Two	.65	254	Two	.80	242	Two	.55
353	Three	.90	354	Three	1.10	342	Three	.80

## WIREHOLDERS WITH INSULATORS

## Peirce

No.	Wires	Spacing	Price
1807	One	0"	\$ .25
190	"	0"	.25
191	"	0"	.30
296	Two	0"	.55
299	"	0"	.55
394	Three	4 1/2"	.80
396	"	6"	.85

## HOUSE RACKS WITH INSULATORS

## Peirce

No.	Wires	Length	Space	Price
183	1	6 1/2"	0"	\$0.40
2925	1	0"	0"	.35
494	4	13 1/2"	4 1/2"	.95
286	2	12 1/2"	6"	.80
383	3	12 1/2"	3"	.95
386	3	18 1/2"	6"	1.20

## SECONDARY RACKS WITH INSULATORS

## Peirce

Light Type				Heavy Type			
No.	Wires	Space	Price	No.	Wires	Space	Price
276	2	6"	\$ .90	278	2	8"	\$1.30
376	3	6"	1.30	378	3	8"	2.15
1276	2	6"	.85	1278	2	8"	1.20
1376	3	6"	1.20	1374	3	4"	1.35
2768	2	8"	.90	.....	..	.....	.....
3768	3	8"	1.30	1378	3	8"	2.00

## INSULATORS ONLY FOR ABOVE BRACKETS

## Peirce

355 Insulator.....	\$ .20	1603 Insulator.....	\$ .10
356 ".....	.25	1606 ".....	.15
465 ".....	.30		

## UNIVERSAL RACK UNITS

## Less Insulators

No.	Each
702 Rack Foot with Bolt.....	\$ .20
704 4" Extension.....	.25
708 8" ".....	.35
712 12" ".....	.45



### RIGID CONDUIT

	Black Per Foot	Galvd. Per Foot	Cutting & Threading Per Thread	Cutting Only Per Cut
1/4"	\$.10	\$.11	\$.20	\$.10
3/8"	.12	.13	.20	.10
1/2"	.17	.19	.25	.10
3/4"	.25	.27	.30	.15
1"	.30	.32	.35	.15
1 1/4"	.40	.43	.40	.20
1 1/2"	.60	.68	.50	.25
2"	.80	.88	.60	.30
2 1/2"	1.02	1.10	.70	.30
3"	1.25	1.35	.80	.30

	$\frac{3}{8}$ " or $\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	1 $\frac{1}{4}$ "	1 $\frac{1}{2}$ "	2"
Threadless . . . . . Per Foot	\$0.09 C	\$0.12 C	\$0.16 C	\$0.22 C	\$0.26 C	\$0.36
Adaptor Wpf. . . . . Each	.15 B	.25 B	.35 B	.65 C	.85 C	1.30
Couplings or Conn. . . . .	.15 B	.25 B	.35 B	.65 C	.85 C	1.30
Elbows less Coupling. . . . .				.50 C	.60 C	1.10

NOTE—One Coupling is included with each 10 ft. Length Conduit.

NOTE—One Coupling is included with each 10 ft. Length Conduit.

## Price Each

Size Each	Bends or Elbows		Couplings		Bushings		Locknut		Erickson Coupl. or Unions	
	Black	Galv.	Black	Galv.	Galv.	Galv.	Galv.	Galv.	Galv.	Reducers
1/2"	\$.16	\$.19	\$.10	\$.11	\$.02	\$.01	\$.35	\$.21		
3/4"	.21	.24	.14	.15	.02 1/2	.01 1/2	.50	.21		
1"	.32	.37	.18	.20	.05	.02 1/2	.70	.28		
1 1/4"	.41	.46	.24	.26	.08	.05	1.10	.42		
1 1/2"	.54	.62	.30	.32	.10	.08	1.60	.56		
2"	.88	1.00	.60	.63	.20	.11	3.35	.70		
2 1/2"	1.45	1.65	.65	.62	.30	.19	6.50	1.30		
3"	3.70	4.25	.74	.81	.40	.32	9.75	1.76		
3 1/2"	8.10	9.30	1.00	1.10	.88	.40	.....	2.60		
4"	9.40	10.75	1.26	1.35	1.40	.58	.....	3.50		

Also on Page PL-10

Also on Page PL-8

Also on Page PL-12

Size		Size	
1/8".....	\$0.01	2".....	\$0.04
3/8".....	.01	2 1/2".....	.05
1".....	.01 1/2	3".....	.07
1 1/4".....	.02	3 1/2".....	.08
1 1/2".....	.03	4".....	.10

Single Strip Per Foot...	1/8"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Double Strip Per Foot...	\$0.09	\$0.12	\$0.14	\$0.19	\$0.40	\$0.45	\$0.64	\$0.79
	.11	.14	.17	.23	.42	.50	.71	.89

For Fittings for Metallic Conduit See Page PL-14.  
 For Non-Metallic Conduit or Loom See Page PL-15.  
 For Steel Armored Cable & Lead Covered See Next Item.

Price per Foot.....	$\frac{3}{8}$ " & $\frac{1}{4}$ "	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{3}{4}$ "
	\$ .25	\$ .30	\$ .45	\$ .55

	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	$1\frac{1}{2}$ "	2"	$2\frac{1}{2}$ "	3"	4"
Price Each.....	\$ .01	\$ .01	\$ .01 $\frac{1}{2}$	\$ .02	\$ .03	\$ .04	\$ .05	\$ .07	\$ .10

Price Each.....	$\frac{1}{2}^{\circ}$ \$.02	$\frac{3}{4}^{\circ}$ \$.03	$1^{\circ}$ \$.04	$1\frac{1}{4}^{\circ}$ \$.08	$1\frac{1}{2}^{\circ}$ \$.14	$2^{\circ}$ \$.22
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**ARMORED CABLE, "BX", "ABC", "FLEXSTEEL", OR  
SIMILAR**

			Price Per Foot		
			No. 14	No. 12	No. 10
TWO CONDUCTOR	Solid	Single Strip	\$.05	\$.08	\$.11
THREE CONDUCTOR	Stranded	" "	". . . . .	". . . . .	". . . . .
FOUR CONDUCTOR	Solid	" "	".08	".11	".14
ONE CONDUCTOR	Stranded	" "	". . . . .	". . . . .	". . . . .
OVALFLEX	Solid	" "	".18	".22	". . . . .
	Solid	" "	".09	".10	".11
	Stranded	" "	". . . . .	". . . . .	". . . . .
	2 Conductor	" "	".08	".12	".16
	3 Conductor	" "	".12	".16	". . . . .
			Price Per Foot		
			No. 8	No. 6	No. 4
TWO CONDUCTOR	Solid	Single Strip	\$ .18	\$ .27	\$ .40
THREE CONDUCTOR	Stranded	" "	".22	".22	".24
FOUR CONDUCTOR	Solid	" "	".23	".32	". . . . .
ONE CONDUCTOR	Stranded	" "	". . . . .	". . . . .	". . . . .
	Solid	" "	".12	".14	".15
	Stranded	" "	".13	".15	".26
Double Strip Armored Cable add 30% to above prices.					
Anti-Short Fibre Bushings for ABC Cable, Each. . . . . \$ .01					
Clips or Staples ¾" for Armored or Non-Metallic Cable, Each. . . . . \$ .01					

Electrical Contracting, May, 1931

				Price	Per Foot	
				No. 14	No. 12	No. 10
Single Conductor	Solid Lead	Covered	.....	\$.08		
	Stranded	"	.....			
Two Conductor	Solid	"	.....	.16	\$.19	\$.25
	Stranded	"	.....			
Three	Solid	"	.....	.22	.26	.31
	Stranded	"	.....			

		Price Per Foot		
		No. 8	No. 6	No. 4
Single Conductor Solid Lead	Covered			
"	Stranded	\$ .15	\$ .22	
Two	Solid			
"	Stranded	\$ .84	\$ .85	
Three	Solid			
"	Stranded	\$ .46	\$ .64	\$ .88

	Per Foot		
Single Strip	No. 18	No. 16	No. 14
Plain Armored Lamp Cord, Two Conductor.....	\$ .11	\$ .12	\$ .15
Add 30% for Double Strip			

(With or Without Ground Wire)	#14	#12	#10	#8	#6	#4
Wire 2 Conductor per Foot.....	\$0.05	\$0.06	\$0.09	\$0.13	\$0.19	\$0.25
Wire 3 Conductor per Foot.....	.08	.10	.13	.20	.27	.38
Fitting-Straps Each.....	.01	.01	.01	.01	.01	.01
Fitting-Clips Each.....	.03	.03	.03			
Fitting-Connectors Each.....	.10	.10	.20	.20	.30	.55

**PLUG CUTOUTS**  
30 Amp. Porcelain

Description	Price
Single Pole—Main Line.....	\$2569
Double " " ".....	\$2665
Triple " " ".....	\$2105
Double Pole Single Branch.....	\$1685
" " Double.....	\$2587
" " Single or Double Cross Branch.....	\$030
Triple to D. P. Double Branch.....	\$2199
Triple Pole Single Branch.....	\$042
" " Double.....	\$2135

**Plug Type—30 Amp.**

BRYANT		With Short Cover		With Long Cover	
		Numbers	Price	Numbers	Price
3	Wire Double Branch—4 Circuit..	72035	\$3.35	82035	\$3.65
G. E. or TRUMBULL					
		With Covers		Without Cov.	
		G.E.	Trumbull	G.E.	Price
3	Wire Single Branch—2 Circuit..	2435	3190	\$1.35	\$1.65
3	" Double "—4 " "	2440	4100	1.80	2.45

	0-30	31-60	61-100
	Amp.	Amp.	Amp.
Single Pole Main Line Enclosed Porcelain.....	\$ .40	\$ .65	\$1.20
Double " " " " " "	.55	1.20	2.30
Triple " " " " " "	.85	1.65	3.30
Double Pole Single Branch Porcelain.....	.75	1.60	..
" Double " " " " " "	1.25	3.30	..
Triple to Double Pole Double Branch Porcelain ..	1.40	3.30	..
Triple Pole Single Branch Porcelain ..	1.30	3.00	..
Triple Pole Double Branch Porcelain ..	2.40	5.40	..
Single Pole Main Line Cutout Base 600 Volt.....	.70	1.00	1.50

		SERIES BASE					
250 Volt	600 Volt	30 A.	60A.	100A.	200A.	400A.	600A.
Single Pole-Slate Base-250 V.....		\$ .60	\$ .90	\$ 1.25	\$ 2.10	\$ 5.20	\$ 6.60
" " " " 600 V.....				1.60	2.50	6.00	7.10

Prices on cutouts do not include fuses

## GROUND CLAMPS

	No. 3		No. 4		No. 5		No. 6	
Standard Adjustable Ground Clamps, any make	.12		.15		.20		.35	
Blackburn.....	.24		.28		.35		.45	
Other Types	B & K		1"		1 1/2"		2"	
Chase Shawmut 3660-68	.25	.30	.35	.45	.50	.60	.65	.70
G. V. A Series 3000.....	.25	.30	.35	.45	.50	.60	.65	.70

	\$6	\$7	\$8	\$9	\$10	\$11	\$12	\$13	\$14	\$15	\$16	\$17	\$18	\$19	\$20	\$21	\$22	\$23	\$24	\$25	\$26	\$27	\$28	\$29	\$30	\$31	\$32	\$33	\$34	\$35	\$36	\$37	\$38	\$39	\$40	\$41	\$42	\$43	\$44	\$45	\$46	\$47	\$48	\$49	\$50	\$51	\$52	\$53	\$54	\$55	\$56	\$57	\$58	\$59	\$60	\$61	\$62	\$63	\$64	\$65	\$66	\$67	\$68	\$69	\$70	\$71	\$72	\$73	\$74	\$75	\$76	\$77	\$78	\$79	\$80	\$81	\$82	\$83	\$84	\$85	\$86	\$87	\$88	\$89	\$90	\$91	\$92	\$93	\$94	\$95	\$96	\$97	\$98	\$99	\$100	\$101	\$102	\$103	\$104	\$105	\$106	\$107	\$108	\$109	\$110	\$111	\$112	\$113	\$114	\$115	\$116	\$117	\$118	\$119	\$120	\$121	\$122	\$123	\$124	\$125	\$126	\$127	\$128	\$129	\$130	\$131	\$132	\$133	\$134	\$135	\$136	\$137	\$138	\$139	\$140	\$141	\$142	\$143	\$144	\$145	\$146	\$147	\$148	\$149	\$150	\$151	\$152	\$153	\$154	\$155	\$156	\$157	\$158	\$159	\$160	\$161	\$162	\$163	\$164	\$165	\$166	\$167	\$168	\$169	\$170	\$171	\$172	\$173	\$174	\$175	\$176	\$177	\$178	\$179	\$180	\$181	\$182	\$183	\$184	\$185	\$186	\$187	\$188	\$189	\$190	\$191	\$192	\$193	\$194	\$195	\$196	\$197	\$198	\$199	\$200	\$201	\$202	\$203	\$204	\$205	\$206	\$207	\$208	\$209	\$210	\$211	\$212	\$213	\$214	\$215	\$216	\$217	\$218	\$219	\$220	\$221	\$222	\$223	\$224	\$225	\$226	\$227	\$228	\$229	\$230	\$231	\$232	\$233	\$234	\$235	\$236	\$237	\$238	\$239	\$240	\$241	\$242	\$243	\$244	\$245	\$246	\$247	\$248	\$249	\$250	\$251	\$252	\$253	\$254	\$255	\$256	\$257	\$258	\$259	\$260	\$261	\$262	\$263	\$264	\$265	\$266	\$267	\$268	\$269	\$270	\$271	\$272	\$273	\$274	\$275	\$276	\$277	\$278	\$279	\$280	\$281	\$282	\$283	\$284	\$285	\$286	\$287	\$288	\$289	\$290	\$291	\$292	\$293	\$294	\$295	\$296	\$297	\$298	\$299	\$300	\$301	\$302	\$303	\$304	\$305	\$306	\$307	\$308	\$309	\$310	\$311	\$312	\$313	\$314	\$315	\$316	\$317	\$318	\$319	\$320	\$321	\$322	\$323	\$324	\$325	\$326	\$327	\$328	\$329	\$330	\$331	\$332	\$333	\$334	\$335	\$336	\$337	\$338	\$339	\$340	\$341	\$342	\$343	\$344	\$345	\$346	\$347	\$348	\$349	\$350	\$351	\$352	\$353	\$354	\$355	\$356	\$357	\$358	\$359	\$360	\$361	\$362	\$363	\$364	\$365	\$366	\$367	\$368	\$369	\$370	\$371	\$372	\$373	\$374	\$375	\$376	\$377	\$378	\$379	\$380	\$381	\$382	\$383	\$384	\$385	\$386	\$387	\$388	\$389	\$390	\$391	\$392	\$393	\$394	\$395	\$396	\$397	\$398	\$399	\$400	\$401	\$402	\$403	\$404	\$405	\$406	\$407	\$408	\$409	\$410	\$411	\$412	\$413	\$414	\$415	\$416	\$417	\$418	\$419	\$420	\$421	\$422	\$423	\$424	\$425	\$426	\$427	\$428	\$429	\$430	\$431	\$432	\$433	\$434	\$435	\$436	\$437	\$438	\$439	\$440	\$441	\$442	\$443	\$444	\$445	\$446	\$447	\$448	\$449	\$450	\$451	\$452	\$453	\$454	\$455	\$456	\$457	\$458	\$459	\$460	\$461	\$462	\$463	\$464	\$465	\$466	\$467	\$468	\$469	\$470	\$471	\$472	\$473	\$474	\$475	\$476	\$477	\$478	\$479	\$480	\$481	\$482	\$483	\$484	\$485	\$486	\$487	\$488	\$489	\$490	\$491	\$492	\$493	\$494	\$495	\$496	\$497	\$498	\$499	\$500	\$501	\$502	\$503	\$504	\$505	\$506	\$507	\$508	\$509	\$510	\$511	\$512	\$513	\$514	\$515	\$516	\$517	\$518	\$519	\$520	\$521	\$522	\$523	\$524	\$525	\$526	\$527	\$528
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	7 ounce Cans	15 ounce Cans	30 ounce Cans	$\frac{1}{2}$ Pint Bottle	1 Pint Bottle	Quart Bottle
Crescent (McGill).....				\$1.25	\$2.50	\$5.00
Cefco.....	\$2.50	\$4.00	\$7.50			
Franco.....				1.25	2.25	4.00
Permacolor.....				1.65	3.00	5.00



## CORD &amp; WIRE CONNECTORS

## SMALL FIXTURE &amp; WIRE CONNECTORS

Solderless	
Insulated Solderless Wire or Fixture Connectors Similar to "Ideal"	
"Marr" "Sherman" "Simplex" "Wirelets" "Wiremold" "Wirenuts" Etc.—each	\$ .10
E-Z Insulated Solderless Wire or Fixture Connector.....	.05
Non-Insulated Solderless Wire Connectors—2 Screw—All Metal.....	.10

## SET SCREW CONNECTORS

Round Brass						
Wire Size		No. 12-14	No. 10	No. 8	No. 6	No. 4
Divided Wall—2 Screws.....		\$ .06	\$ .08	\$ .09	\$ .10	\$ .14
Hole Thru " 4 ".....		.11	.16	.12	.13	.18
" " 2 ".....				.13	.15	.20
Wire Size		No. 2	No. 1/0	No. 2/0	No. 3/0	No. 4/0
Divided Wall—2 Screws.....		\$ .15	\$ .20	\$ .24	\$ .30	\$ .45
Hole Thru " 2 ".....		.26	.24	.30		
" " 4 ".....		.22	.28	.30	.45	.60

## SOLDERLESS CONNECTORS

## Dossert or Penn-Union

Size Cond.	No. 3 to 1	No. 1/0	No. 2/0	No. 3/0	No. 4/0	250,000	300,000	400,000	500,000
2 Way L's.....	\$0.75	\$0.80	\$1.00	\$1.20	\$1.40	\$1.65	\$1.90	\$2.50	\$3.05
Cable Taps.....	1.05	1.20	1.40	1.75	2.10	2.40	2.85	3.75	4.65
3 Ways & Y's.....	1.05	1.20	1.40	1.75	2.10	2.40	2.85	3.75	4.65
Luxe FB Ang. ....	.55	.60	.70	.90	1.10	1.20	1.40	1.85	2.40

## CORD &amp; MOTOR CONNECTORS

Complete		Body Only		Cap Only	
Arrow	No. Price	No. Price	No. Price	No. Price	No. Price
Midget Comp.	8238 \$ .60				
" Arrotex	8239 .85				
Motor Conn.	RA-8221 .60	8221 \$ .55	RA	1.10	
" "	RA-8222 .65	8222 .55	RA	.15	
" "	RH-8224 1.05	8224 .75	RH	.35	
" "	RG-8281 1.05	8281 .75	RG	.35	
" "	8334 & 35 1.10	8335 1.10	8334	1.10	
Bryant					
Motor Midget	KT-130 .70	130 .65	KR	.10	
" Conn.	KG-103 .75	103 .55	KG	.25	
GE					
Cord Conn.	1346-1347 .90	1347 .45	1346	.45	
" "		1351 .60	2527	.10	
" "	2719 1.50	2720 .95	2721	.35	
" "	2715 .65	2716 .55	2717	.10	
" "		1347 .40	1346	.40	
Hubbell					
Cord Connector	5894 .80	5574 .55	5896	.25	
" "	6116 .70	6118 .55	5964	.15	
" "	6179 .75	6630 .55	6631	.20	
" "	6180 .65	6630 .55	6181	.10	
" "	5518 .80	5574 .55	5420	.25	
" "	7083 1.35	7084 .85	7056	.55	
" "	7090 1.80	7091 1.10	7092	.75	
" "	6408 1.25	6409 .85	6149	.45	
Weber					
Cord Connector	2274 .60	.74	.45	2200	.20
Wirt					
Cord Connector	.56	.55			

NOTE: For Attachment Plugs and other caps—See Pages PL-16 &amp; PL-17

## E-SUNDRIES

## EXTENSION CORDS—MADE UP

With Plug &amp; Socket, but Guards-Lamps &amp; Handles Extra

Length in Feet	With Lamp Cord and Key Socket		With Reinforced Cord and Key Socket		With Artificial Silk Cord and Key Socket	
	No. 18	No. 16	No. 18	No. 16	No. 18	No. 16
4 Foot.....	\$ .75	\$ .80	\$ .85	\$ .80	\$ .85	\$ .85
6 ".....	.80	.90	.95	.90	.95	.95
8 ".....	.85	1.00	1.05	1.00	1.05	1.05
10 ".....	.90	1.10	1.20	1.10	1.20	1.20
12 ".....	.95	1.20	1.30	1.20	1.30	1.30
14 ".....	1.00	1.30	1.45	1.30	1.45	1.45
16 ".....	1.05	1.40	1.55	1.40	1.55	1.55
18 ".....	1.10	1.50	1.65	1.50	1.65	1.65
20 ".....	1.15	1.60	1.75	1.60	1.75	1.75
22 ".....	1.20	1.65	1.85	1.65	1.85	1.85
24 ".....	1.25	1.75	1.95	1.75	1.95	1.95
Length in Feet	With All Rubber Cord and Weatherproof Socket		Light		Heavy	
	No. 18	No. 16	No. 18	No. 16	No. 18	No. 16
4 Foot.....	\$1.00	\$1.10	\$1.15	\$1.25		
6 ".....	1.20	1.30	1.40	1.50		
8 ".....	1.35	1.50	1.65	1.75		
10 ".....	1.50	1.70	1.90	2.00		
12 ".....	1.75	1.90	2.15	2.25		
14 ".....	1.90	2.10	2.40	2.50		
16 ".....	2.10	2.30	2.65	2.75		
18 ".....	2.25	2.50	2.90	3.00		
20 ".....	2.40	2.70	3.15	3.25		
22 ".....	2.65	2.90	3.40	3.50		
24 ".....	2.85	3.10	3.65	3.75		

## ELBOWS &amp; BENDS

## For Rigid Conduit

Size	1/2"	3/4"	1"	1 1/4"	1 1/2"
Black.....	\$ .16	\$ .21	\$ .32	\$ .41	\$ .54
Galv.....	.19	.24	.37	.46	.62
Size	2"	2 1/2"	3"	3 1/2"	4"
Black.....	\$ .88	\$1.45	\$3.70	\$5.10	\$9.40
Galv.....	1.00	1.65	4.25	9.30	10.75

## EXPANSION SHIELDS &amp; ANCHORS

(Ackerman—Johnson—Chicago Expansion Bolt—Diamond—Dryvin—Packtite—Paine—Star or Similar)

Screws Not Included.		Hammer Drive Anchors With Nail	
Expansive Screw Anchors or Caulking	Price	Size of Shield	Price
Anchors for Machine Screws or Bolt			
Size Screw or Bolt			
6-32 Screw.....	\$0.06	1/2"x1 1/4"	\$0.06
8-32 ".....	.07	3/4"x1 1/4"	.07
10-24 ".....	.08	1"x1 1/4"	.08
12-24 ".....	.10	1 1/4"x1 1/4"	.09
1-4x20 Bolt.....	.12	1 1/2"x1 1/4"	.10
5-16x18 ".....	.15	1 3/4"x1 1/4"	.12
3-8x16 ".....	.18	2"x1 1/4"	.14
7-16x14 ".....	.20	2 1/4"x1 1/4"	.16
1-2x13 ".....	.20	2 1/2"x1 1/4"	.20
5-8x13 ".....	.30	3"x1 1/4"	.22
		3 1/2"x1 1/4"	.25

## Multi-Size Screw Anchors

Length of Anchor.....	Screw Size			
	5 to 10	8 to 14	16 to 20	16 to 20
Price Without Screw.....	3/8" \$0.04	1" \$0.05	1 1/2" \$0.06	1 3/4" \$0.08

## LAG SCREW ANCHORS (Diamond or Similar)

Takes Lag Screw	3/4"	1"	1 1/2"	1 3/4"	2"
Price Without Lag Screw.....	\$ .15	\$ .15	\$ .18	\$ .25	\$ .35
Takes Lag Screw	3/4"	1"	1 1/2"	1 3/4"	2"
Price Without Lag Screw.....	\$ .40	\$ .60	\$ .90	\$1.00	\$1.00

## FUSES

## PLUG FUSES

Standard Plug Fuses—Any Make—\$.07 each or 5 for \$.25 (Some Manufacturers put these fuses up 4 in a box, in which case they should be retailed at 4 for \$.25.)

## ENCLOSED FUSES, NON-RENEWABLE

Amps.	Non-Indicating		Indicating	
	Price Each		Price Each	
	250 Volts	600 Volts	250 Volts	600 Volts
1 to 30.....	\$ .15	\$ .35	\$ .25	\$ .55
35 to 60.....	.25	.50	.40	.85
70 to 100.....	.80	1.18	1.25	1.85
110 to 200.....	1.55	1.95	2.30	3.10
225 to 400.....	2.75	4.20	4.50	6.80
450 to 600.....	4.25	6.15	6.80	9.90
650 to 800.....	8.90	11.15	13.85	17.35

## RENEWABLE FUSES

Amps.	Fuses		Links	
	250 Volts	600 Volts	250 Volts	600 Volts
1 to 30.....	\$ .50	\$ 1.10	\$ .03	\$ .05
35 to 60.....	1.00	1.25	.05	.08
65 to 100.....	2.00	3.00	.10	.10
110 to 200.....	4.00	6.00	.15	.15
225 to 400.....	7.50	11.00	.30	.30
450 to 600.....	11.00	16.00	.60	.60

## FUSE WIRE

Size in Amps.....	1/4	1/2	1	2		
Price Per Pound.....	\$60.00	\$6.50	\$2.65	\$3.30		
Price Per Foot.....	.01	.01	.01	.01		
Size in Amps.....	3	5	6	10	15	
Price Per Pound.....	\$2.00	\$1.60	\$1.60	\$1.30	\$1.30	
Price Per Foot.....	.01	.01 1/4	.02	.02 3/4	.08	
Size in Amps.....	20	25	30	40	50	
Price Per Pound.....	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	
Price Per Foot.....	.04	.05	.07	.08	.10	
Size in Amps.....	60	70	75	80	90	100
Price Per Pound.....	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Price Per Foot.....	.15	.20	.21	.22	.24	.25

Fuse Strip Any Amperage.....\$1.00 per lb.

Fuse Strip Any Amperage...\$1.00 per lb.

## OPEN LINK FUSES

## Small Wire Type

Size in Amps.....	1 to 30	35 to 60	65 to 100
Numbers.....	00-0-1-2-3	2-3-5	4
Price Each.....	\$ .12	\$ .16	\$ .23

## Large Strip Type

Size in Amps.....	25-100	110-200	225-400
Numbers.....	7	7 to 16	10 to 16
Price Each.....	\$ .23	\$ .30	\$ .60
<hr/>			
Size in Amps.....	425-600	600-800	800-1500
Numbers.....	10 to 16	28	40
Price Each.....	\$1.10	\$1.85	\$6.95

## STAMPED SHEET METAL LINK FUSES

Type of Link.....	B	C	D	E-F-H-I-L-M
C to C Distance.....	1 1/2"	2 1/4"	2 3/4"	See Catalog
Price Each.....	\$ .11	\$ .11	\$ .16	\$ .80

Electrical Contracting, May, 1931



# THREADED CONDUIT FITTINGS

## STANDARD TYPES, COVERS EXTRA

"Condulets" "Taplets" "Unilets" "Electrolets" "V. V." "Adaptlets" Etc.

Form 7	1/2"	3/4"	1"	1 1/4"	1 1/2"
A	.33	.44	.60	.87	1.12
B	.40	.50	.70	1.75	2.10
C	.50	.57	.83	1.32	1.71
CO-COV	.70	.91	1.05	1.75	2.25
E	.40	.50	.70	1.12	1.46
F	.70	1.12	1.75	3.08	4.46
Form 7	.56	.63	.91	1.47	1.96
LB-LF-LL-LR-LBB	.56	.63	.91	1.47	1.96
LFB-LLB-LRB	.61	1.12	1.33	1.75	2.80
LBL-LBR	1.95	2.20	2.40	...	...
P-PA	2.10	2.30	2.50	...	...
PC-PL	2.40	2.65	2.95	...	...
PT	2.60	2.80	3.10	...	...
PX	.67	.80	1.12	1.71	2.37
T All One Size	.98	1.05	1.40	2.15	3.22
TA All One Size	.68	.81	1.12	1.71	2.38
TB-TL-TR	.68	.75	1.10	1.76	2.35
U-UB	.84	1.09	1.47	1.96	2.50
X All One Size	.14	.14	.21	.28	.28
Gaskets	.21	.21	.28	.42	.56
Reducers	.40	.42	.49	1.54	1.96
Connectors CCT	.65	.75	1.10	1.75	2.65
Unions U. N. Y.					

Form 7	2"	2 1/2"	3"	3 1/2"	4"
A	\$2.32	\$5.46	\$ 6.50	\$10.60	\$11.70
B	3.65	5.24	7.30	9.10	16.65
C	3.40	6.46	8.10	11.70	14.30
CO-COV	4.45	6.75	10.27	16.38	17.95
E	3.00	5.48	6.50	10.60	11.70
F	7.00	10.66	13.26	23.53	32.50
Form 7	3.50	6.50	8.45	13.65	15.60
LB-LF-LL-LR-LBB	3.50	6.50	8.45	13.65	15.60
LFB-LLB-LRB	3.72	8.52	...	...	...
LBL-LBR-LW	3.58	6.50	9.75	14.30	16.90
T All One Size	5.53	...	...	...	...
TA All One Size	3.58	6.50	9.75	14.30	16.90
TB-TL-TR	4.20	7.80	10.15	16.38	18.75
U-UB	4.90	7.80	13.00	16.90	20.80
X All One Size	.35	.52	.52	.65	.65
Gaskets	.70	1.30	1.76	2.60	3.58
Reducers	3.01	...	...	...	...
Connectors CCT	4.10	6.65	11.15	...	...
Unions U. N. Y.					

For Form 6 LB Fittings See PL-13

## COVERS For Above

	1/2"	3/4"	1"	1 1/4"
Porcelain Covers with Holes.....	\$1.14	\$2.21	\$3.35	\$5.51
Composition " Blank.....	.28	.42	.70	1.40
Porcelain " For Drop Cord.....	.42	.56	.84	1.54
Porcelain " Weatherproof.....	.22	.35	...	...
Metal Covers Blank Sheet Steel.....	.12	.16	.33	.45
" " Cast Iron.....	.21	.31	.49	.70
" " with 1/4" Nipple.....	.28	.35	.59	...
" " " 1/2" ".....	.33	.40	.54	...
" " " 3/4" ".....	.35	.42	.56	...
Porcelain Covers with Holes.....	\$1.67	\$2.84	\$1.12	\$1.26
Composition " Blank.....	1.55	1.68	...	...
Porcelain " For Drop Cord.....	1.68	1.96	4.40	0.90
Porcelain " Weatherproof.....	...	...	...	...
Metal Covers Blank Sheet Steel.....	.63	.79	1.05	1.12
" " Cast Iron.....	.98	1.26	1.61	1.75
" " with 1/4" Nipple.....	...	...	...	...
" " " 1/2" ".....	...	...	...	...
" " " 3/4" ".....	...	...	...	...

## RECEPTACLES & ROSETTES

For Above

	1/2"	3/4"	1"
Plug Receptacles 10 Amp. 2 Pole 250 Watt.....	\$1.56	\$1.63	\$1.70
" " 15 " 2 " 125 ".....	...	.63	.70
" " 20 " 2 " 250 ".....	.77	.84	.91
" " 10 " 3 " 250 ".....	.84	...	...
" " 15 " 3 " 125 ".....	...	.91	...
" " 20 " 3 " 250 ".....	1.10	1.20	...
Lamp Receptacle 60 Watt with Shade Holder.....	.42	.49	.56
Cord Rosette " ".....	.42	.49	.56

## FS SERIES FOR FLUSH DEVICES Shallow Type Without Covers, Any Make

No. Gangs	No. Pipe Outlets	Series	1/2"	3/4"	1"
Single Gang	One	FS-FSA	\$1.91	\$1.06	\$1.19
"	Two	FSC-FSL-FSR-FSLA-FSS-FSAA	1.05	1.26	1.54
"	Three	FSCA-FSCC-FSCT-FST	1.40	1.75	2.03
"	Four	FSX-FSCD	1.68	2.10	2.38
Two Gang	One	FS-FSA	1.68	1.82	1.96
"	Two	FSC-FSS	1.82	1.96	2.17
"	Three	FSD	2.03	2.17	2.31
"	Four	FS	2.31	2.45	2.59
2 Gang Tandem	Two	FSC	2.45	2.59	2.73
Three Gang	One	FS-FSA	...	2.52	2.73
"	Two	FSC	...	2.66	2.87
"	Four	FSD	2.73	3.01	3.32
Four Gang	One	FS-FSA	...	3.08	3.36
"	Two	FSC-FSSE	...	3.29	3.50
"	Five	FSD	3.44	4.00	4.34

## COVERS FOR FS FITTINGS

Description	Single Gang	2 Gang	3 Gang	4 Gang
Metal Cover for Flush or Surface Push Button Tumbler Switches.....	\$1.21	\$1.42	\$1.63	\$1.84
Metal Cast Covers Guarded for Switches.....	.30	.91	1.40	1.96
" Covers for Single Flush Receptacles.....	.35	.70	...	...
" " Duplex ".....	.42	.84	...	...
" " Single " Lift Cover.....	.84	1.68	...	...
" " with 1/4" Brass Nipple.....	.56	...	...	...
" " For Pilot Lamp Rec. with Jewel.....	1.40	...	...	...
" Iron Vaporproof with Operating Mechanism.....	2.45	4.20	...	...
" Brass ".....	\$1.50	\$1.05	...	...
" Blank Cover Sheet Steel.....	.14	.28	.56	.84
" Cast.....	.35	.70	1.05	1.40
Porcelain Cover with Holes.....	.28	...	...	...

## COMBINATION COVERS FOR FS SERIES

2 Gang for One Switch and one Single or Duplex Receptacle.....	\$1.70
2 " " " Ball's Eye with Jewel.....	1.75
3 " " " One Lift cover Receptacle.....	1.05

## RECEPTACLES & PLUGS

Type	3 Pole, 250 Volt D. C.—600 Volt A. C. Style 1	30 Amp.	60 Amp.
Crouse-Hinds or Similar	15 Amp.	1" 1 1/4"	1 1/2"
QEE Receptacle	\$10.20 \$10.35 \$10.45	...	...
QE	10.10 10.20 10.35	...	...
AJA	...	\$20.80 \$20.95 \$22.55 \$22.65	...
AJB	...	19.95 20.10 22.20 22.35	...
CP Watertight Plugs	0.70 0.70 0.70 15.45 15.45 17.60 17.60	...	...

## G & H WITHOUT ADJUSTABLE BAR

Type	5 Amp.	10 Amp.	15 Amp.	20 Amp.
Crouse-Hinds or Similar	1/2" 3/4" 1" 1 1/4"	1 1/2" 1 3/4" 2" 2 1/4"	2 1/2" 3" 3 1/2" 4"	4 1/2" 5" 5 1/2" 6"
G.....	\$1.56 \$1.70 \$1.05	\$1.70 \$1.91 \$1.19	...	...
GL.....	.63 .77 1.12	.77 .98 1.26	.98 1.19 1.50	1.19 1.50 1.88
GA-GLA-GT.....	.84 .98 1.33	.98 1.19 1.50	1.19 1.50 1.88	1.50 1.88 2.24
GTA-GX-GXA.....	1.05 1.19 1.58	1.19 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31
H.....	.42 .56 .91	.56 .77 1.05	.77 .98 1.26	.98 1.19 1.50
HA.....	.49 .63 .98	.63 .84 1.12	.84 1.05 1.33	1.05 1.26 1.54
HH.....	.56 .70 1.05	.70 .91 1.19	.91 1.12 1.40	1.12 1.40 1.68
HHC.....	.84 .98 1.33	.98 1.19 1.50	1.19 1.40 1.68	1.40 1.68 1.96
HLA.....	.65 .77 1.12	.77 .98 1.26	.98 1.19 1.50	1.19 1.50 1.88
Crouse-Hinds or Similar	1/2" 3/4" 1" 1 1/4"	1 1/2" 1 3/4" 2" 2 1/4"	2 1/2" 3" 3 1/2" 4"	4 1/2" 5" 5 1/2" 6"
G.....	\$1.90 \$1.05 \$1.19	\$1.19 \$1.40 \$1.61	...	...
GL.....	1.05 1.19 1.54	1.19 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31
GA-GLA-GT.....	1.26 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31	1.88 2.24 2.65
GTA-GX-GXA.....	1.50 1.71 2.17	1.71 1.88 2.31	1.88 2.24 2.65	2.24 2.65 2.95
H.....	.63 .77 1.12	.77 .98 1.26	.98 1.19 1.50	1.19 1.50 1.88
HA.....	.70 .84 1.19	.84 1.05 1.33	1.05 1.26 1.54	1.26 1.54 1.82
HH.....	.77 .91 1.26	.91 1.12 1.40	1.12 1.40 1.68	1.40 1.68 1.96
HHC.....	1.05 1.19 1.54	1.19 1.40 1.68	1.40 1.68 1.96	1.68 1.96 2.24
HLA.....	.84 .98 1.33	.98 1.19 1.50	1.19 1.50 1.88	1.50 1.88 2.24

## G & H WITH ADJUSTABLE BAR

Type	5 Amp.	10 Amp.	15 Amp.	20 Amp.
Crouse-Hinds or Similar	1/2" 3/4" 1" 1 1/4"	1 1/2" 1 3/4" 2" 2 1/4"	2 1/2" 3" 3 1/2" 4"	4 1/2" 5" 5 1/2" 6"
G.....	\$1.77 \$1.91 \$1.26	\$1.91 \$2.12 \$1.40	...	...
GL.....	.84 .98 1.33	.98 1.19 1.50	1.19 1.50 1.88	1.50 1.88 2.24
GA-GLA-GT.....	1.05 1.19 1.54	1.19 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31
GTA-GX-GXA.....	1.26 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31	1.88 2.24 2.65
H.....	1.50 1.71 2.17	1.71 1.88 2.31	1.88 2.24 2.65	2.24 2.65 2.95
HA.....	.63 .77 1.12	.77 .98 1.26	.98 1.19 1.50	1.19 1.50 1.88
HH.....	.70 .84 1.19	.84 1.05 1.33	1.05 1.26 1.54	1.26 1.54 1.82
HHC.....	.77 .91 1.26	.91 1.12 1.40	1.12 1.40 1.68	1.40 1.68 1.96
HLA.....	1.05 1.19 1.54	1.19 1.40 1.68	1.40 1.68 1.96	1.68 1.96 2.24
Crouse-Hinds or Similar	1/2" 3/4" 1" 1 1/4"	1 1/2" 1 3/4" 2" 2 1/4"	2 1/2" 3" 3 1/2" 4"	4 1/2" 5" 5 1/2" 6"
G.....	\$1.26 \$1.33 \$1.68	\$1.33 \$1.50 \$1.88	...	...
GL.....	1.33 1.40 1.82	1.40 1.61 2.03	1.61 1.88 2.31	1.88 2.24 2.65
GA-GLA-GT.....	1.54 1.68 2.03	1.68 1.96 2.31	1.96 2.24 2.65	2.24 2.65 2.95
GTA-GX-GXA.....	1.76 1.96 2.31	1.96 2.24 2.65	2.24 2.65 2.95	2.65 2.95 3.25
H.....	1.96 2.24 2.65	2.24 2.65 2.95	2.65 2.95 3.25	2.95 3.25 3.55
HA.....	1.12 1.19 1.54	1.19 1.26 1.68	1.26 1.33 1.68	1.33 1.40 1.82
HH.....	1.19 1.26 1.68	1.26 1.33 1.68	1.33 1.40 1.82	1.40 1.50 1.88
HHC.....	1.54 1.68 2.03	1.68 1.82 2.10	1.82 2.10 2.38	2.10 2.38 2.65
HLA.....	1.33 1.68 2.03	1.68 2.10 2.38	2.10 2.38 2.65	2.38 2.65 2.95

## COVERS FOR G & H SERIES

Description	For G & H Fittings Without Adjustable Bar	For G & H Fittings With Adjustable Bar
Porcelain Cover with Wire Holes.....	5 Amp. 10 Amp. 20 Amp. 30 Amp.	5 Amp. 10 Amp. 20 Amp. 30 Amp.
Blank Sheet Steel Cover.....	\$1.28 \$1.35 \$1.56 \$1.21	\$1.35 \$1.42 \$1.56 \$1.21
" Cast.....	.21 .28 .35 .42	.35 .42 .56 .63
Sheet Steel with 1/4" Brass Nipple.....	.35 .42 .49 .56	.42 .49 .56 .63
" " " 1/2" ".....	.42 .49 .56 .63	.49 .56 .63 .70
" " " 3/4" ".....	.50 .56 .63 .70	.56 .63 .70 .77
Receptacle Covers No Shadeholder.....	.70 .70	...
" " With.....	1.12	...

## DEVICES FOR G & H SERIES

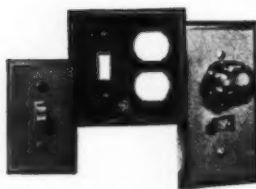
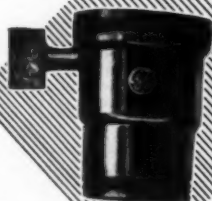
Lamp Receptacles one piece with or without Shadeholder Groove.....	\$1.35
" " two " without.....	.70
" " " without.....	.63
Cord Rosette Porcelain.....	.56
" Composition.....	.70

## J & K SERIES WEATHERPROOF

	1/2"	3/4"	1"
J.....	\$1.84	\$1.06	\$1.50
JA-JB-JU.....	.98	1.19	1.61
KL.....	1.19	1.33	1.50
LT.....	1.33	1.50	1.61
LX.....	1.50	1.61	1.82
K.....	.70	.91	1.33
KA-KB-KC-KD.....	.84	1.05	1.50

# TEXTOLITE LAMPHOLDERS

## ADD (\*) EXTRA QUALITY TO YOUR WORK



Textolite flush plates are superior for use with switches or outlets. They will not rust or tarnish, are easily cleaned, and give life-long service.

Four caps, four types of bodies, two bases complete the G-E lampholder line

Textolite Lampholders bring the reputation of General Electric products to your work.

The \*threaded-ring connection between shell and cap eliminates the possibility of vibration, knocks, or bumps pulling them apart.

The \*insulating properties of Textolite prevent shocks from the socket. With \*no lining to char or deteriorate their useful life is lengthened. Furthermore their \*pleasing finish lasts indefinitely, making them suitable for use anywhere.

With all these extra quality advantages, Textolite Lampholders are approved for use wherever porcelain lampholders could be used. Let them add \*extra quality to your work.

Wherever you sell G-E Wiring Devices there's a market for G-E Appliances. Get both these profits.

# GENERAL ELECTRIC



## WIRING DEVICES

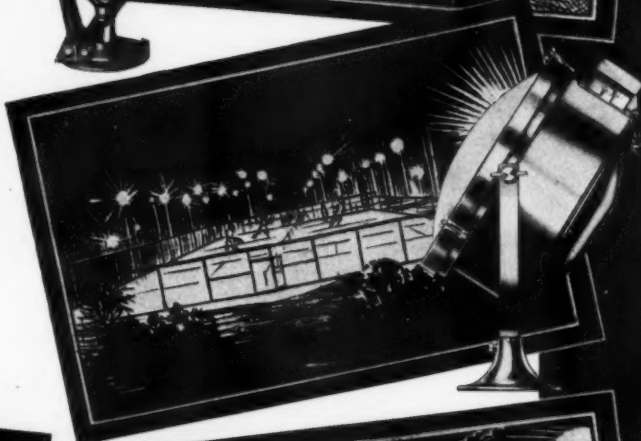


MERCHANDISE DEPARTMENT • GENERAL ELECTRIC COMPANY • BRIDGEPORT, CONNECTICUT

# PIERCING THE NIGHT *with* Sterling FLOOD-O-LITE

MODERN beacons of illumination . . . strong, sturdy, powerful . . . ever ready to contribute their brilliant performance to the field of outdoor sports and recreation.

**Sterling** FLOOD-O-LITES are designed to precision. We believe they provide the most efficient outdoor illumination obtainable. Highest quality materials and painstaking care in construction guarantee the utmost of service and satisfaction and maximum resistance to severe wear under all weather conditions.



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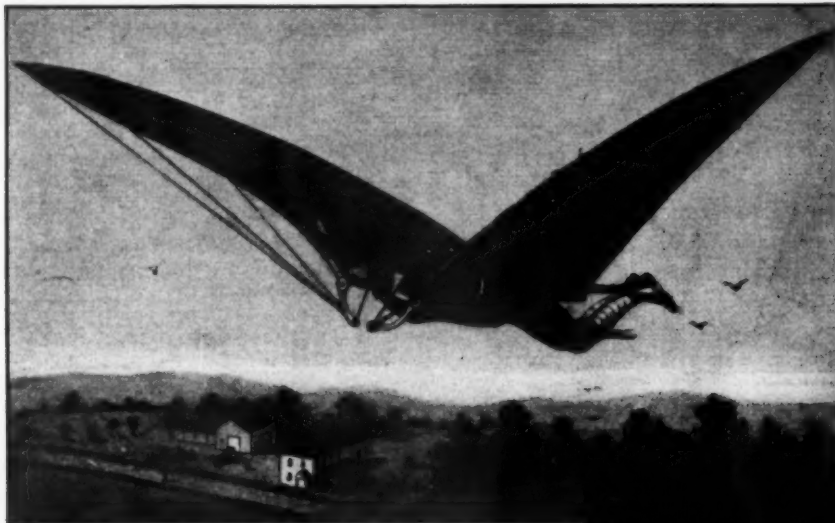
*Manufacturers & Engineers*

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REPRESENTATIVES IN ALL PRINCIPAL CITIES



## M I L E S T O N E S   O F   P R O G R E S S



Compare this creation, which flew only in the imagination of its inventor, with the planes which win altitude, speed and endurance contests today. Progress has brought us this development, which only a few years ago was "impossible".

## DARIUS GREEN had a big idea



STEELTUBES [E.M.T.]\* has the same inside diameter as heavy conduit. Made in three sizes ( $\frac{1}{4}$ ",  $\frac{3}{8}$ " and 1") with diameter and wall thickness shown above. One coupling furnished with each ten-foot length.

STEELTUBES carries the Underwriters' Label, and is approved and listed as Standard by the Associated Factory Mutual.

MILLIONS once laughed at the old poem about "Darius Green and his Flyin' machine"... but they stopped when the Wright Brothers showed them it *could* be done. That's progress.

A great many users of conduit have said "There's only one way to do a good wiring job," until they saw—and tried Steeltubes. Again... progress!

More and more users are finding out about the economy—lightness—convenience—of Steeltubes Electrical Metallic Tubing. Easy to cut—no threading! It's worth trying out on your next wiring job.

Electrical Division  
STEEL AND TUBES, INC.  
Cleveland, Ohio

(A Unit of Republic Steel Corp.)

★ STEELTUBES Electrical Metallic Tubing is threadless, strong, light and easy to handle. Costs less to buy. Saves time and money on the job.

# Steeltubes

THREADLESS THIN WALL CONDUIT





### Fittings, Conduit

Lamp Receptacle S. H. Groove.....	\$ .63
"    "    No S. H. Groove.....	.66
Plug Receptacle 10 & 15 Amp.....	.70
"    "    20                            "	.91
"    "    10                            3-wire.....	.98
Cord Rosette.....	.49
Blank Cast Cover.....	.42

		Form 75	
V-VA & VDA as above	16 <sup>00</sup>	16 <sup>00</sup>	1 <sup>00</sup>
VC & VL	\$5.85	\$3.92	\$6.00
VE-VG & VT	5.98	6.11	6.24
VK	6.17	6.30	6.56
VF	6.37	6.53	6.76
VD & VJ	6.70	6.87	7.00
		Form 200	
V-VA & VDA as above	16 <sup>00</sup>	16 <sup>00</sup>	1 <sup>00</sup>
VC & VL	\$7.02	\$7.09	\$7.16
VE-VG & VT	7.15	7.28	7.35
VK	7.28	7.50	7.63
VF	7.41	7.67	7.87
VD & VJ	7.67	7.60	
	7.67	7.80	7.93

	Form 75	Form 200
Globes only, clear glass.....	\$1.12	\$1.12
"    "    opal.....	2.38	54
"    "    green, blue or orange.....	3.30	30
"    "    ruby.....	2.38	3.06
Guards Cast Aluminum.....	2.52	3.12
Half Shades.....	1.68	2.45
Keceptacle with Gasket.....	.56	.91
Reflector Holders Cast Aluminum.....	.70	
Adaptor.....	1.05	1.26

		(Page 56, Crouse Hinds Cat. 2200 or Similar)			
Pendant or	Bracket	Fixture with	Recep. Globe and	Guard Form	75.... \$7.93
00	00	00	00	00	200.... 8.84

STANDARD TYPES								
<b>"Kondu" Crouse-Hinds "Appleton" "Adaptilts" or Similar</b>								
Types	1½"	¾"	1"	1¼"	1½"	2"	2½"	3"
Whitcat Covers	\$0.46	\$0.62	\$0.84	\$1.26	\$1.61	\$3.15	\$6.65	\$8.10
A.....	.53	.70	.95	1.47	1.96	3.85	6.65	8.10
B.....	.95	1.23	1.79	2.74	3.64	6.30	11.70	13.30
C.....	.74	.94	1.33	2.03	2.66	5.11	8.55	11.10
CB.....	1.04	1.34	1.86	2.80	3.65	6.16	9.90	14.30
D.....	.74	.94	1.29	2.03	2.66	5.11	8.55	11.10
E.....	.53	.67	.94	1.48	1.96	3.85	6.65	8.10
F-LB-LF-LL-LR.....	.81	.98	1.40	2.17	2.94	5.18	8.80	11.50
SE.....	.81	1.09	1.71	2.66	3.99	7.00	11.85	14.80
T-TL-TR.....	1.04	1.34	1.85	2.80	3.85	6.16	9.90	14.40
TB.....	1.47	1.82	2.38	3.64	5.18	9.00	.....	.....
X & UB.....	.91	1.12	1.54	2.52	3.29	6.00	10.10	13.20
X.....	1.35	1.85	3.43	4.48	8.33	12.35	19.10	.....
XL.....	2.03	2.52	3.29	.....	.....	.....	.....	.....
LBI-LBR-LU.....	1.26	1.68	2.31	.....	.....	.....	.....	.....

H Couplings.....	1 1/2"	1 3/4"	1"	1 1/4"
KO Box Connector.....	\$ 32	\$ 48	\$ 83	\$ 114
NO.....	.20	.29	.67	1.32
SCA Cable Connector.....	.24	.31	.66	.88
SLP Short Elbow.....	.13	.17	.24	..
KOL Box Connector.....	.39	.52	.83	1.06
KOR Reducer.....	.43	.57	.98	1.54
H Couplings.....	1 1/2"	2"	2 1/2"	3"
KO Box Connector.....	\$1.54	\$3.21	\$4.00	\$6.32
NO.....	1.18	2.49	3.28	4.38
SCA Cable Connector.....	..	..	..	..
SLP Short Elbow.....	.20	.29	..	..
KOL Box Connector.....	2.07	4.20	..	..
KOR Reducer.....	..	..	..	..

	3/8"	1/2"	1"	1 1/2"
Blank Metal.....	\$.12	\$.16	\$.32	1.00
Rubber Gasket.....	\$.14	.15	.22	\$.25
Metal, 1/4 Nip.....	.28	.35	.49	.65
" 3/8 ".....	.32	.40	.54	.65
" 1/2 ".....	.35	.42	.58	.75
" 3/4 ".....	.49	.59	.63	.75
Porcelain with Hole.....	.14	.21	.35	.65
Metal, Cord Grip.....	.28	.35	.49	.65

	1 1/2"	2"	2 1/2"	3"
Blank Metal.....	\$ .63	\$ .79	\$1.05	\$1.05
Rubber Gasket.....	.28	.56	.84	.84
Metal, 1/4 Nip.....	.82			
" 1/2 ".....	.86			
" 3/4 ".....	.88			
" 1 ".....	.96			
" 1 1/2 ".....	.68			
Porcelain with Hole.....				1.25
Metal, Cord Grip.....	7.50	7.54	12.25	12.25

			$\frac{1}{8}$ "	$\frac{3}{8}$ "	1"
Lamp Recept., without Shade Holder Groove PR.....			\$ .35	\$ .42	\$ .49
" " " " " " " " " " FR5....				..49	..66
Porcelain for Weatherproof Socket WP2.....			..28		
Polarity Plug Receptacle 10 Amp. P.....			..56	..63	..70
" " " " Duplex PD.....				..70	..78
Snap Switch 5 Amp. 125 Volt Non Indicating....			Sgle. Pole \$ .70	Dble. Pole ....	3 Pole \$1.26
" " " 5 " 125 " Indicating.....			..77		
" " " 10 " 125 " Non-Indicating.....			1.12	\$1.47	1.47
" " " 10 " 125 " Indicating.....			1.26	1.68	....

Any Make						
Type	1 Gang			2 Gang		
	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"
FSE-FSB.....	\$1.05	\$1.26	\$1.40	\$1.82	\$2.03	\$2.24
FSC-L & R.....	1.39	1.61	2.03	2.10	2.31	2.60
FST.....	1.75	2.31	2.73	.....	.....	.....
FSU.....	1.26	1.61	2.03	.....	.....	.....
FSD.....	1.75	2.31	2.73	2.38	2.73	3.08

Any Make						
Type	3 Gang			4 Gang		
	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"
FSE-FSB.....	.....	\$2.73	\$3.01	.....	\$3.36	\$3.64
FSC-L & R.....	.....	3.08	3.30	.....	3.71	3.96
FST.....	.....	.....	.....	.....	.....	.....
FSU.....	.....	.....	.....	.....	.....	.....
FSD.....	\$3.22	3.57	3.85	\$4.27	.....	.....

	One Gang	2 Gang
Blank Metal Plate.....	\$.37	\$.70
Receptacle Plate.....	.28	.88
Toggle or Push Button Switch Plate.....	.35	

Type	5 Amp.			10 Amp.			20 Amp.		
	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"
OA.....	\$0.63	\$0.64	\$0.77	\$1.05	\$1.33	\$1.05	\$1.19	\$1.19	\$1.61
OC.....	.77	1.05	.91	1.26	1.68	1.19	1.40	1.40	1.96
OCB.....	1.19	1.54	1.33	1.75	2.24	1.61	1.96	1.96	2.53
OE.....	.56	.77	.70	.98	1.26	.98	1.12	1.47	1.47
OEB.....	.91	1.12	1.05	1.33	1.75	1.33	1.54	2.10	2.10
OL.....	.91	1.12	1.05	1.33	1.75	1.33	1.54	2.10	2.10
OLB.....	1.19	1.54	1.33	1.75	2.24	1.61	1.96	2.53	2.53
OT.....	1.19	1.54	1.33	1.75	2.24	1.61	1.96	2.53	2.53
OTB.....	1.19	1.54	1.33	1.75	2.24	1.61	1.96	2.53	2.53
OU.....	.77	1.05	.91	1.26	1.68	1.12	1.47	1.96	1.96
OUE.....	1.19	1.54	1.33	1.75	2.24	1.61	1.96	2.53	2.53
OX.....	1.54	1.96	1.68	2.10	2.80	1.96	2.38	3.72	3.72
OXB.....	1.89	2.31	2.03	2.52	3.36	2.31	2.87	3.36	3.36

	5	10	20
	Amp.	Amp.	Amp.
Blank Metal Cover, Round.....	\$ .21	\$ .28	\$ .31
Porcelain Cover, Round with holes.....	.21	.35	.46
Metal Cover with ¼ or ½ Cord Grip.....	.35	.42	.46
Blank Metal Cover with ¾ male or female nipple.....	.39	.48	.53
" " " " " " " " " " " " " " " "	.42	.49	.56
" " " " " " " " " " " " " " " "	.49	.56	.63
" " " " " " " " " " " " " " " "	.56	.63	.70
Rubber Gaskets.....	.14	.14	.20
Lamp Receptacles Porcelain Edition Base.....	.42	.49	.56
Composition T Slot.....	.84		

	Large End	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Small End	1 1/2"	\$ .41	\$ .53	\$ .71	\$ .80	\$1.05	\$1.40	\$1.56
"	1"	..	.60	.76	.90	1.19	1.50	1.67
"	3/4"	..	..	.81	.94	1.29	1.60	1.80
"	1 1/4"	..	..	..	1.13	1.43	1.90	2.10
"	1 1/2"	..	..	..	..	1.51	1.90	2.40
"	2"	..	..	..	..	..	2.27	2.90
"	2 1/2"	..	..	..	..	..	..	3.20

---

Description	G.E., Steel City or T & B Numbers	Price
Branch Box Rectangular for $\frac{1}{2}$ & $\frac{3}{4}$ " Conduit....	SP-48241	\$ 2.25
Cover Metal Flat Closed .....	SP-48C1	1.10
" " " with $\frac{1}{2}$ " Knockout.....	SP-48C6	1.10
" " " Pendant Type with $\frac{1}{2}$ " Bushing.....	SP-48C8	1.10
" " " Pendant Type with $\frac{3}{4}$ " Bushing.....	SP-48C11	1.10
" " " with $\frac{1}{2}$ " Male or Female Nipple.....	SP-48C23 & 25	1.10
" " " with $\frac{3}{4}$ " Male or Female Nipple.....	SP-48C24 & 26	1.10
Cover Porcelain with one or two wire Holes.....	SP-48C75 & 76	1.10
" " " three or four wire Holes.....	SP-48C77 & 78	1.10

### FITTINGS, SPRAGULETS, WIRELETS OR T & B—Continued

**SHALLOW TYPE**  
**Series 14**

Description	G.E., Steel City or T & B Numbers	Price Each
Body Octagonal Shape for $\frac{1}{8}$ " or $\frac{3}{8}$ " Conduit.....	SP-14241	\$ .95
Cover Metal Flat Closed.....	SP-14C1	.10
" Raised with $\frac{1}{8}$ " Knockout.....	SP-14C7	.10
Cover Metal Flat Pendant with $\frac{1}{8}$ " Bushing.....	SP-14C8	.12
" " " " " "	SP-14C11	.16
" " " with $\frac{1}{8}$ or $\frac{3}{8}$ Male Nip.....	SP-14C22-24	.30
" " For all surface Mounted Devices SP-14C25		.15
" Raised for Sign Receptacles.....	SP-14C31-34-35-36	.15
" Flat for all Fluted Devices.....	SP-14C39	.30
" Porcelain with one or two holes.....	SP-14C75 & 76	.15
" Three or Four holes.....	SP-14C77 & 78	.15

**DEEP TYPE**  
Series 34

Description	G. E., Steel City or T & B Numbers	Price Each
Body Deep Octagonal Shape $3\frac{1}{2}$ " & $3\frac{3}{4}$ "	SP-34461	\$4.45
Cover Metal Blank Flat	SP-34461	.14
Cover Metal " Push Button Switches	SP-34461 & #3	.14
" " " Single Receptacle	SP-34465	.14
" " " Standard Duplex Receptacle	SP-34467	.14
" " " For GE 30 Amp. Polarized Plug Recep.	SP-34413	.18
" " " GE Tumbler Switches	SP-34415	.14
" " " Hubble and H&H Tumbler Switches.	SP-34415	.16

## COUPLINGS

SP-1410 Complete Coupling for $\frac{1}{2}$ " Conduit.....	Price \$ .15
SP-1420 " " " $\frac{3}{4}$ " " .....	.25

**FITTINGS, ENTRANCE OR SERVICE**

## "ADAPTI"

	3/4"	3/4"	1"	1 1/4"
Ent. Ells with Cov. Ser. 1100 .....	\$ .45	\$ .50	\$ .60	\$1.05
" Fitt. with Cov. Ser. 2700 .....	.45	.55	.65	1.10
Angle Ent. Fitt. with Cover Ser. 2700 ..	.50	.55	.65	1.20
Signal Ent. Caps No. 2810-2811 .....	.75	.80	.....	.....
	1 1/2"	2"	2 1/2"	3"
Ent. Ells with Cov. Ser. 1100 .....	\$1.55	\$3.00	.....	.....
" Fitt. with Cov. Ser. 2700 .....	1.85	3.00	\$5.25	\$7.65
Angle Ent. Fitt. with Cov. Ser. 2700 ..	1.85	3.00	6.30	7.25
Signal Ent. Caps No. 2810-2811 .....	.....	.....	.....	.....

**"APPLETON"**

FEB Elbow with Cov. 1700 & 1900.....	1 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	1"	1 $\frac{3}{4}$ "
FEB Elbow with Cov. 1713 to 16.....	\$ .50	\$ .60	\$ .70	\$1.70
FC End Fitt. with Cov. 1723-33-43.....	.35	.50	.60	
FC End Fitt. with Cov. 1723-33-43.....	.20	.25	.30	
AY Angle Fitt. 1950 to 54.....	.50	.55	.70	1.85
LAY End Fitt. with Cov. 1790 to 94.....	.45	.50	.60	1.10
MF Reversible Fitt. 3200-3230.....	.45	.55	.75	1.30
FEB Elbow with Cov. 1700 & 1900.....	1 $\frac{1}{2}$ "	2"	2 $\frac{1}{2}$ "	3"
FEB Elbow with Cov. 1713 to 16.....	\$1.90	\$3.25	\$7.50	\$9.00
FC End Fitt. with Cov. 1723-33-43.....	.....	.....	.....	.....
AY Angle Fitt. 1950 to 54.....	2.25	.....	.....	.....
LAY End Fitt. with Cov. 1790 to 94.....	1.75	.....	.....	.....

## "BEND HICKS"

Bend Hicks Galvanized.....	1½"	¾"	1"	1¼"
	\$ .50	\$ .60	\$ .65	\$1.75
Bend Hicks Galvanized.....	1½"	3"	2½"	3"
	\$2.15	\$4.10	\$6.60	\$8.25

### "CAP-SWIVEL-LET"

	14"	3 1/2"	1"	1 1/4"	1 1/8"	2"
"A" Inside Work #1010 to 1064.....	\$0.20	\$0.25	\$0.30	\$0.35	\$0.40	\$0.50
"BW" Threadless Fitt. 4112-4134.....	.45	.50	.75			
"BW" Threaded Fitt. 2112-2124.....	.35	.45				
"FW" Outside Work 1412-1464.....	.40	.50	.65	1.05	1.80	3.00
"LB" Service Entrance 3100-3130.....	.50	.55	.65			
"AM" for Nipple 1/4" Long.....	\$0.20	For Nipple 1/2" Long.....	\$0.30			
Type "BXA" from 1600 to 1613.....	.20	From 1614-1624.....	.30			
From 1632-1634.....	.35					

**"CONDULETS"—Form 6**

F Type Ent. Fitt. with Porc. Cov.....	1½	1½	1"	1½
LB Type Ent. Fitt. with Metal Cov....	\$4.40	\$4.50	\$6.00	\$1.90
	.45	.50	.60	1.10
F Type Ent. Fitt. with Porc. Cov.....	1½	2"	2½	3"
LB Type Ent. Fitt. with Metal Cov....	\$1.60	\$2.85	.....	.....
	1.40	2.45	.....	.....

## "ELECTROLETS"

FB Angle Fitt. with Cov. 713-83.....	34"	34"	1"	134"
KA End Fitt. with Cov. 1013 to 43.....	\$ .45	\$ .55	\$ .70	\$ 1.10
SLB Elbow Fitt. with Cov. 1 to 4.....	.20	.20	.25	.30
Y Capped Elbow Y1 to 5.....	.50	.55	.65	1.70
FB Angle Fitt. with Cov. 713-83.....	134"	2"	234"	3"
KA End Fitt. with Cov. 1013 to 43.....	\$ 1.55	\$3.00	\$6.60	\$8.50
SLB Elbow Fitt. with Cov. 1 to 4.....	.....	.....	.....	.....
Y Capped Elbow Y1 to 5.....	2.20	.....	.....	.....

## "GENERAL ELECTRIC"

With Covers		3½"	3½"	1"	1¾"
Ent. Caps Series	1525 to 1534	\$ .45	\$ .55	\$ .70	\$ .95
Capped Elbow Series	1470 to 1472	.45	.60	.60	
Capped Elbow Series	1480 to 1484	.50	.70	.70	1.55
Insulets Series	1610 to 1612	.20	.25	.30	.....
Insulets Angle Series	1640 to 1642	.30	.40	.50	.....
Entrance Ells	1490 to 1495	.40	.45	.55	1.00
With Covers		1¾"	2"		
Ent. Caps Series	1525 to 1532	\$1.60	\$2.75	\$8.90	\$10.90
Capped Elbow Series	1470 to 1472	.....	.....	.....	.....
Capped Elbow Series	1480 to 1484	2.25	.....	.....	.....
Insulets Series	1610 to 1612	.....	.....	.....	.....
Insulets Angle Series	1640 to 1642	.....	.....	.....	.....
Entrance Ells	1490 to 1495	1.55	3.00	8.35	10.50

## GEE-VEE

F Service Cap Series 6000.....	1½"	\$ .45	3"	\$ .70	2½"	\$1.00
B " " " 16000.....		.45	.60	.70		1.75
P Pipe " " 1000-1810.....	.40	.60	.75			.85
FB " " 2000 & 2100.....	.40	.45	.65			.75
FB Universal " 3000.....	1.00	1.25	1.65			2.75
Weathercap " 40122.....	.30	.50				
Service Elbow " 19000.....	.45	.50	.60			1.10
Endo Terminal Series 90000.....	.15	.20	.25			1.05
Ends with Male Thread Series 70000.....	.25	.35	.60			
Endo for Armored Cable 31143.....						
No. 14-2 or No. 12-3 Wire.....	.20					
Endo for Armored Cable.....						
Series 30000, Nos. 14 and 12 wire, \$1.5; No. 10 wire, \$3.0; No. 6 wire, \$4.5						
SEG Service Elbow Series. 400-¾"x½"x½", \$7.0; 1x1½", \$1.15; 1½x1½"x½", \$1.75						
F Service Cap Series 6000.....	1½"	\$1.90	3"	\$3.35	2½"	\$7.00
B " " " 16000.....		1.90	3.75	7.00		9.25
P Pipe " " 1000-1810.....		1.20	1.75	3.00		4.15
FB " " 2000 & 2100.....		1.05				
FB Universal " 3000.....		3.75	5.40	9.25		12.70
Weathercap " 40122.....						
Service Elbow " 19000.....		2.75	3.60			
Endo Terminal " 90000.....		1.40	2.40	4.55		7.40

## "TAPLETS"

	$\frac{1}{8}$ "	$\frac{3}{8}$ "	1"	1 $\frac{1}{2}$ "	1 $\frac{3}{4}$ "	2"	2 $\frac{1}{2}$ "	3"
AR End Fitt. with Bushing.....	\$ .40	\$ .55	\$ .70	\$ .90	\$ 1.30	\$ 1.70	\$ 2.30	\$ 3.00
BF Angle Fitt. with Covers.....	.35	.55	.65	1.20	.....	.....	.....	.....
FA End Fitt. with Covers.....	.15	.20	.....	.....	.....	.....	.....	.....
PB End Fitt. with Covers.....	.30	.45	.....	.....	.....	.....	.....	.....
FF Service Fitt. with Covers.....	.40	.45	.65	1.00	1.70	2.95	6.25	7.65
FH Service Fitt. with Covers.....	.85	1.05	1.50	1.90	3.05	4.90	11.50	12.60
SE Service Elbow with Covers.....	.95	1.10	1.25	1.90	2.50	4.20	8.45	9.85

## T &amp; B

Ent. Cap 1525-32 with Cover.....	1½"	3½"	1"	1½"
Capped Elbow 1470-84 with Cover.....	\$ .40	\$ .50	\$ .65	\$1.00
Insulets 1610-11-12 with Cover.....	.50	.60	.70	1.95
Angle Insulets 1640-12 with Cover.....	.15	.20	.25	
Cable Insulets 2000 with Cover.....	.30	.45	.60	
	.15			
Ent. Cap 1525-32 with Cover.....	1½"	2"	2½"	3"
Capped Elbow 1470-84 with Cover.....	\$1.70	\$2.95	\$7.55	\$9.25
Insulets 1610-11-12 with Cover.....	2.30			
Angle Insulets 1640-12 with Cover.....				
Cable Insulets 2000 with Cover.....				

"V. V."

	$\frac{1}{2}$ "	$\frac{3}{4}$ "	1"	$1\frac{1}{4}$ "	2"	2 $\frac{1}{2}$ "	3"
Type 2 Term. Fitt. with Cov. ....	\$ .60	\$ .80	\$ .81	\$ .51	\$ .52	\$ .53	\$ .55
Type 6 Term. Fitt. with Bush. ....	.40	.55	.70	.90	1.30	1.70	2.30
Type 9 Term. Fitt. with Cov. ....	.70	1.05	1.40	2.80	4.20	7.00	12.65
F. C. Pipe End Porc. Cover. ....	.25	.40	.45	.85	1.15	2.35	3.80
F. C. Pipe End Porc. Cover. ....	.15	.20	.25				
FCBX with Cover. ....	.15						
Y Bend with Cast Cover. ....	.25	.45	.55	1.15	1.35	2.25	
Y Bend Hick. ....	.50	.60	.65	1.75	2.15	4.10	

### FITTINGS, "ADAPTI"

### ROUND "ADAPTI" BOXES

Series Numbers	Style	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
No. 2900 to 2905..	1 Back Outlet	\$ .40	\$ .46	\$ .60	\$1.05		
No. 3100 to 3105..	1 Side	.40	.46	.60	1.05	\$1.80	\$2.40
No. 3100T & 3101T							
Threadless	" " "	.48	.55	..	..	..	..
No. 3170 to 3175..	" " "	.46	.53	.66	1.15	1.85	2.40
No. 3200 to 3205..	2 " "	.48	.55	.73	1.25	2.11	2.75
No. 3200T & 3201T							
Threads	" " "	..	..	..	..	..	..
No. 3270 to 3275..	" " "	.60	.67	..	..	..	..
No. 3270T to 3275T	" " "	.60	.67	.93	1.40	2.23	2.85
No. 3300 to 3305..	3 " "	.58	.60	.85	1.34	2.20	2.80
No. 3300T to 3305T	3 " "	.64	.75	.98	1.60	2.65	3.00
Threadless	" " "	..	..	..	..	..	..
No. 33170 to 33175	" " "	.80	.92	..	..	..	..
No. 3400 to 3405..	4 " "	.70	.82	1.05	1.70	2.70	3.05
No. 3500 to 3505..	5 " "	.80	1.00	1.20	1.85	2.85	3.30
No. 3600 to 3605..	6 " "	.83	.60	..	..	2.25	3.00
No. 3800 to 3805..	8 " "	.53	.60	.80	1.40	2.25	3.00
No. 3900 to 4105..	3 " "	.80	.93	1.05	1.75	2.85	3.95
No. 4900 to 5005..	4 " "	.93	1.05	1.32	1.90	3.50	4.65









# WE CONSULTED SCORES OF CONTRACTORS...

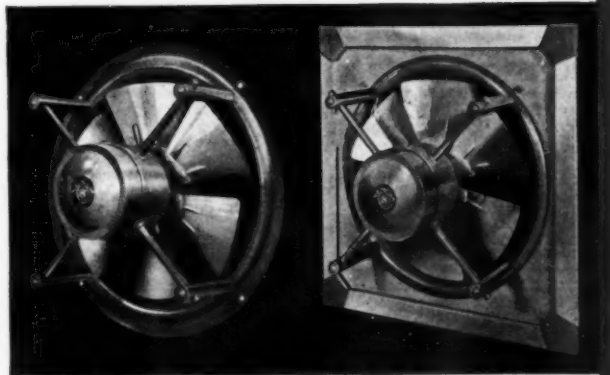
*then we designed  
this Sturtevant Fan*

Before making a single drawing for this new Sturtevant Propeller Fan, we sent investigators to interview men who sell and install fans. Scores of contractors were visited and asked for suggestions for an ideal fan...one that would make the job of selling and installation easier and more profitable...one that would please the user, too. Out of the experience of these contractors came many constructive suggestions.

To these ideas, we added our own...the result of many years of experience in making this type of equipment. Then we put to work all our resources, and all the abilities of Sturtevant engineers. Our aim was to produce as nearly as possible the ideal propeller fan. Those who have seen the new Sturtevant say that we have succeeded. Certainly it is a notable improvement...decidedly better looking...exceptionally light and easy to install—highly efficient and quiet running.

The price is right, too. You can sell the new Sturtevant and meet "good fan" competition. Line-up with this fan, now, for a profitable business in commercial and industrial ventilation. The season is here. Mail the coupon...and get the facts about the New Sturtevant without delay.

**B. F. STURTEVANT COMPANY**  
Main Offices: Hyde Park, Boston, Mass. Chicago, Ill., 410 No. Michigan Ave. San Francisco, Cal., 681 Market St. Branch Offices in Principal Cities. Canadian Offices at Toronto, Montreal, Galt.  
Canadian Representative: Kipp Kelly, Ltd., Winnipeg.



# Sturtevant

REG. U. S. PAT. OFF.

# Propeller Fan

B. F. STURTEVANT COMPANY, Hyde Park, Boston, Mass.

- ☐ Please send me Bulletin No. 385, containing all the facts about the New Sturtevant Propeller Fan.  
☐ Have your local Sales Cooperator call.

Name \_\_\_\_\_ Company \_\_\_\_\_  
Street \_\_\_\_\_ City & State \_\_\_\_\_


R. O. 5-31

# **NOW** *is the time* *to* **SELL** **WHEELER OUTDOOR LIGHTING EQUIPMENT**

More equipment for the lighting of recreation grounds will doubtless be sold this season than ever before—and now is the time to go after it! In the wide range of Wheeler Equipment, you will find an answer to any problem of outdoor lighting you may encounter. The service of Wheeler Engineers is available at all times to aid you in making recommendations for special lighting requirements. The quality of Wheeler products cannot be surpassed—neither can the profits they will win for you.

## **OUTSIDE FLOODLIGHTING UNIT**

FOR FLOODLIGHTING GASOLINE STATIONS, PLAYGROUNDS, PARKING AREAS, DRILL GROUNDS, BATHING BEACHES, GOLF COURSES, ETC.



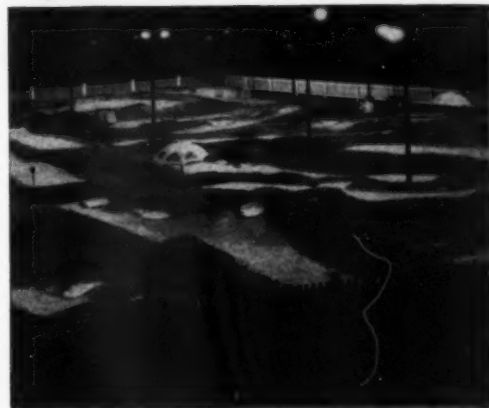
A sturdy, weather-proof unit, for use on all outside installations where large open areas are to be lighted. Can be mounted separately or in pairs. Adjustable vertically or horizontally, allowing light to be directed as desired. Accommodates one 750, 1000 or 1500 watt lamp. Easily wired, quickly installed.

## **SHORT RANGE FLOODLIGHT**

FOR FLOODLIGHTING BUILDINGS, YARDS, BUILDING CONSTRUCTION, PARKING SPACES, ETC.



Designed for general short range floodlighting service. Can be mounted at any angle and adjusted to the desired focus. All parts are of aluminum and entirely weatherproof. The body contains a parabolic reflector and has a hinged door fitted with a diffusing glass lens. Accommodates a 300 or 500 watt general service lamp. A highly efficient unit.



## **R. L. M. STANDARD DOME**

FOR LIGHTING MINIA-TURE GOLF COURSES, ROADSIDE STANDS, OUT-DOOR DISPLAYS, ETC.

Wheeler RLM Domes provide a broad even flood of light over any playing area, eliminating shadows and glare. Available with Wheeler Durex, Duratach or "S" canopy constructions. Dusttight Glass Cover is available for protection of reflector interior.



## **ONE PIECE ISOLUX**

SIDE LIGHTING UNIT, FOR FACTORIES, YARDS, PLATFORMS, SKATING RINKS, TENNIS COURTS, ETC.

Wheeler One-Piece Isolux is a highly efficient unit wherever overhead lighting cannot be employed. It is ruggedly constructed and provides a light distribution wide enough to meet the most difficult requirements. Varying sizes will accommodate 100 to 1000 watt lamps.



Suspension Fittings for Wheeler Outdoor Lighting Units are available. They may be obtained with Suspension Loop or with Cable Grip, as desired.

**WHEELER REFLECTOR COMPANY, 275 CONGRESS ST., BOSTON, MASS.**

NEW YORK

CHICAGO

CLEVELAND

ATLANTA

Sales Offices: St. Louis, Indianapolis, Los Angeles, San Francisco, Seattle. In Canada, Canadian General Electric Co., Ltd.



# **PL-18** **Molding**

# **Plugs, Appliance**

## **OVALDUCT FITTINGS**

No.	Description	Price Each
24-CQ	Extension box cover for 4" outlet boxes	\$1.45
401	Box Connector with 1/2" Bondnut	.25
2133	Squeeze Type Coupling 1 1/4" long	.15
2134	90 Degree Internal Elbow	.35
2135	45 " Flat	.26
2136	One piece 90 degree elbow	.50
2156	90 " Box Connector	.30
2159	Wire Toggle Fastener	.03
2161	Strap Fastener	.02
2181	Connector Ovalduct to Oval Knockout	.10
2662	Outlet Box 4 x 3 1/2"	.20
2663	Extension Ring for Boxes	.20
2665	Outlet Box 4 x 3 1/2" with Fixture Stud	.28
2662	" " 3 1/4 x 3 1/4"	.20
2665	" " 3 1/4 x 3 1/4" with Fixture Stud	.26
4170-S1	Sectional Switch Box 4 x 1 1/2" x 1"	.35
4172-S1	Spacer for above box	.30

## **MOLDING, WIREMOLD**

### **MOLDING**

No. 500 2-Wire,	price per ft.	\$ .10
" 700 4-Wire,	" " "	.12
" 1000 Master Size,	" " "	.23

### **FITTINGS FOR No. 500**

Number	Description	Price
502	Bushing	\$0.04
504	Supporting Strap	.04
506	Connecting Cover	.04
511-12	45 & 90 Deg. Elbow	.22
515	Tee Plain	.36
516	Cross Plain	.38
517	Internal Elbow	.24
518	External "	.22
519	Corner Box	.38
521	1 Piece Rosette	.36
523	1/2" Fixture Rosette	.75
524	" "	.70
525	Receptacle Base	.80
526	Keyless Receptacle	.95
527	Attachment Plug	1.00
532-23	2 1/2" & 3" Outlet Box	.45
535	Operwork Coupling	.36
599	Moulding Connector	.08

### **FITTINGS FOR No. 700**

Number	Description	Price
701	Coupling	\$0.04
702	Bushing	.04
703	Clip	.06
704	1 & 2 Hole Strap	.06
706	Connection Cover	.04
707	Multiple Strap	.10
708	Fixture Hook	.22
709	Ground Clamp	.12
711-12	Elbows 45 & 90 Deg.	.22
715	Tee	.36
717	Internal Elbow	.25
717A	Elbow Pull Box	.50
718	External Elbow	.22
719	Corner Box	.45
720	Narrow Fitting	.55
720A	Show Case Outlet	.45
721	1 Piece Rosette	.35
724	Comb	.70
725	Receptacle Base	.80
726	Keyless Receptacle	.95
727	Plug Receptacle	1.00
728	Utility Box	.40
729	" Cond. Type	.40
730	Contact Block	.26
731	Blank Cover	.15
732-3	2 1/2" & 3" Outlet Box	.45
734	Closed Extension "	.65
735	Distribution Box	.75
736	Blank Cover	.16
737	4 1/4" Extension Box	.65
738	4 1/4" Fixture Box	.65
738D	Diple Thru Hook Conn.	1.50
738E	Stamped Hook	.65
	Canopy	.65

### **FITTINGS FOR No. 700**

Number	Description	Price
5739	6 3/4" Fixture Box	\$0.95
5739A	6 3/4" Extension	.95
5744	Single Deep Box	.85
5744-2	2 Gang	1.20
5745	Combination	.70
5747	Single Shallow Box	1.05
5747-2	2 Gang	1.15
5747-3	3 "	1.15
5748	Single Surface	.85
5748-2	2 Gang	1.15
5748-3	3 "	1.20
5748S	Shallow " Rec.	.65
5749	Switch & Recep.	1.00
5750	Push Switch Box	1.05
5751	Single Adp. Plate	.70
5752	2 Gang	1.25
5753	3 "	1.30
5760	Blank Extension Box	.95
5780	Chase Nipple	.30
5781&A	1/2" & 3/4" Box Connector	.35
5782&A	1/2" & 3/4" Pipe Coupling	.36
5783	1/2" Elbow Box Conn.	.36
5784	1/2" Pipe Coupl.	.36
5785	Comb. Connector	.28
5786	Adj. Offset Conn.	.40
5788	Openwork Connector	.45

### **FITTINGS FOR No. 1000**

Number	Description	Price
1001	Coupling	\$0.06
1002	Bushing	.04
1003	Clip	.06
1005	One Hole Strap	.08
1008	Hanger Assembly	.90
1008A	Hanger Clamp	.18
1009	Ground	.20
1011	90 Deg. Flat Elbow	.40
1013	Adj. Elbow	.40
1017	Internal Elbow	.35
1018	External "	.35
1020	Keyless Receptacle	.90
1020A	Angle	1.40
1020B	Blank or Outlet Box	.50
1028	Utility Box	.70
1035	Distribution Box	1.10
1039	6 3/4" Fixture	.90
1048	Switch & Recp. Box	1.00
1082	Pipe Coupling	.60
1085	Comb. Connector	.35
1086	Offset Connector	.70
1087	Kick Plate	.32
1089	Reducing Connector	.15
1000F	Flex. Fitting 18"	1.75

## **LEWIS METER AND SWITCH CABINETS**

CLASS A	Amp.	Volts	Wire	Fuse	Neutral	MAIN FUSE ACCESSIBLE	Numbers	Price
30	125-250	3	2	Solid		M7311-M7311		\$12.30
30	125-250	3	2	"		M7311M-M7311M		12.80
30	125	2	1	"		M7211M-M7211M		12.30
30	125	2	2	Fused		M7211D-M7211D		12.95
60	125-250	3	2	Solid		M7312-M7312		19.75
60	125-250	3	2	"		M7312M-M7312M		19.05
60	125	2	1	"		M7212-M7212		19.30
60	125	2	1	"		M7212M-M7212M		19.05
60	125	2	2	Fused		M7212D-M7212D		19.30
<b>CLASS B</b>								
30	125	2	1	Solid		M5211 or M5211		\$12.30
30	125-250	3	2	"		M5311 " M5311		12.80
30	125	2	2	Fused		M 211 " ML 211		12.20
30	125-250	3	2	Unfused		M 311 " ML 311		12.30
30	250	2	2	Fused		M 221 " ML 221		12.95
60	250	2	2	"		M 222 " ML 222		15.30
30	125-250	3	2	Unfused		M 321 " ML 321		12.70
30	125-250	3	2	Solid		M 321SN or ML 321SN		12.70
60	125-250	3	2	"		M 322 or ML 322		15.30

### **"METER TEST TYPE" CABINETS**

30 Amps.	Cat. No. M303 or ML303	\$6.25
60 Amps.	Cat. No. M602 or ML602	7.30

## **N-SUNDRIES**

### **PIPE NIPPLES**

Size Conduit	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Close Nipples—Galv.								
Cond. Cond.	\$0.07	\$0.08	\$0.12	\$0.16	\$0.20	\$0.24		
Standard Short Nipples—Black or Galv.								
Length Conduit	2" to 3 1/2" Long	\$0.10						
2 1/2" " 4 1/2" "		\$0.12	\$0.15					
2 1/2" " 4 1/2" "			\$0.21	\$0.21				
3" " 4 1/2" "				\$0.35				
3 1/2" " 5 1/2" "					\$0.70			
Length Conduit	4" Long	\$0.10						
5" " "		.14	\$0.14	\$0.20	\$0.24	\$0.30	\$0.38	
6" " "		.15	.17	.22	.28	.34	.40	\$0.80 \$1.00
7" " "		.18	.21	.27	.34	.40	.55	1.05 1.25
8" " "		.21	.23	.30	.37	.45	.60	1.12 1.40
10" " "		.22	.25	.33	.40	.50	.67	1.22 1.55
11" " "		.24	.27	.37	.40	.50	.75	1.35 1.65
12" " "		.30	.35	.45	.58	.70	.95	1.45 1.80
		.30	.38	.48	.61	.75	1.00	1.55 1.95

### **CHASE NIPPLES & COUPLINGS**

Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"
Chase Nipples each	\$ .10	\$ .10	\$ .10	\$ .14	\$ .25	\$ .28	\$ .32	\$ .50 \$ .70 \$1.10
Couplings	.12	.12	.12	.14				

For Erickson Couplings, see Page PL-8.

### **CHASE MALE REDUCERS**

### **CHASE FEMALE ENLARGERS**

### **T & B or Similar**

1/4" to 1/2" Reducer, each	\$ .20	1/2" to 3/4" Enlargers, each	\$ .20
1/4" " 1/2" "	.25	1/2" " 3/4" "	.25
1/4" " 1/2" "	.45	1/2" " 1 1/4" "	.35
		1/4" " 1 1/2" "	.50

### **NAILS—Insulated**

Millonite Insulated Nails, per dozen	\$ .05
Leather Nail Heads,	.05
Staples Insulated,	.05

## **PLUGS, ATTACHMENT**

### **ATTACHMENT PLUGS COMPLETE**

ATTACHMENT PLUGS COMPLETE		Price
"Pony" Composition.....		\$0.15
Standard.....		.20
Genuine "Bakelite".....		.20
Polarized Standard Comp. Plug.....		.20
Large Size Double T Slot Comp.....		.70
Porcelain.....		.55
Weatherproof One Piece Comp.....		.40
Benjamin #903 Sirel Plug.....		.20
Pony Body Only \$0.10.....	Standard Body, \$0.15.....	Large Body.....\$0.35

### **10 AMP.—CAPS ONLY**

### **For Attachment Plugs**

"Pony" Cap Composition	\$0.10
"Standard" Cap	.10
"Bakelite"	.15
Large Size Cap Composition	.25
Plug With Extension Knob	.20
Soft Rubber Cap	.25
"Standard" Cord Grip Cap	.30
"Steel Covered Cap	.15
"Brass	.40
"Steel	.45
"Cord Grip	.45
Disappearing Door Comp. Cap	1.00
Brass Cov. Cap	1.20
"Standard" Brass Cov. Finger Grip	.60
"Knostrain" Comp. Cap	.45
Brass Cov. Knostrain	.75
Comp. Fusible Cap	.50
Polarized 2 Wire Comp.	.25
"2" Brass Cov. Cap	.45
"2" Steel	.30
"2" Cord Grip	.45

### **20 AMP. CAPS**

### **For Polarized Devices**

2 Wire Brass Covered Cap	\$0.85
3 " Steel Covered Cord Grip Cap	1.00
3 " Steel Covered Cord Grip Cap	1.10

### **30 & 40 AMP. CAPS**

### **For Polarized Devices**

30 Amp. 2 Wire Porcelain Cap	\$1.50
30 " 2 " Steel Cov. Cord Grip	1.80
30 " 3 " Porcelain	1.55
30 " 3 " Steel Cov.	1.75
40 " 3 " Str. Cap Ground. C. G.	2.85

### **Flasher Plugs**

Diamond Flasher Button	\$0.60	No. 125 Speeddoodle Plugs	\$2.50
"Propp" #530 Flasher Button	.50	No. 164 " "	.60
"Rodale" 110 Volt Plug	.50	No. 161 " "	.80
220 Volt "	.65	No. 165 " "	.90

## **PLUGS, APPLIANCE**

Make	No.	Description	Price
American Beauty	802	Plug Complete for Small Irons	\$0.40
	806	" " Large	1.25
	807	" " Toasters & Stoves	.20
Beaver	F-1	"Gripall" Super-Type Adjustable Cont.	.45
	F-4	" " Nickel Alloy	.55
	F-5	" " Armored Casing	.55
	F-6	" " Nil. Alloy Cont.	.60
	F-7	" " Adj. Cont. Bakelite	.50
	F-22	"Sutizall" Heater Plug—Full Size	.20

## PLUGS, APPLIANCE, Continued

Beaver	F-31	Standard Heater Plug—Single Sided Cont.	\$0.15
"Gripall" & "Suitzall"	F-32	Heater Plug Double Sided Contacts	.20
	F-33	Armored Casing (F-32 Type Armored)	.25
	F-34	Medium Heater Plug—Bakelite	.25
	F-35	Small Heater Plug—Black	.20
	G-1	"Gripall" Heater Switch Plug Adj. Cont.	.80
	G-2	"Gripall" Heater Switch Plug Nickel Alloy Contacts	.90
	G-21	Competitive Push Button Type	.45
	G-22	New Toggle Type	.45
Bryant	668	Universal Appliance Plug with Switch	.85
	669	Switchless	.50
	752	Appliance Plug with Indicating Switch	.60
	2066	Small Switchless Plug	.45
Cutler-Hammer	7051	Appliance Plug with Switch	.60
	2602	Armored Heater Plug No Switch	.25
G. E.	2633	Large Heater Plug	.25
	2642	Switch "with"	.45
	2699	Small "No"	.25
	2826	"Handy Pull" Heater Plug	.35
Hemco	H250	Switchless Appliance Plug Bakelite	.50
	H260	Switch	.75
Hotpoint	CD6P1	Iron Plug No Switch	.45
	CD6P1	"Armored"	.60
	CD7P1	"with"	1.00
Kool-Pull (Noark)	8037	Appliance Plug—No Switch	.75
	8039	"with"	1.00
Propp	5	One 4-All Appliance Plug—No Switch	.30
	52	Iron Plug with Switch	.20
	55	Standard Iron Plug—No Switch	.20
	56	Armored	.30
Reynolite	500	Heater Plug	.40
	510	Switch Heater Plug	.75
Rodale	P-21	Heater Plug No Switch Cold Molded	.15
	P-29	Armored	.20
	450	F tall Heater Plug—No Switch	.45
	610	Bakelite "Small"	.20
	615	Armored Heater Plug—No Switch	.30
	850	Iron Plug with Switch	.45
	800	Armored	.65
Simplex	890	Armored Plug—No Switch	.75
	990	Deluxe Chromplate Plug	1.00
Sunbeam	A-85	Heater Plug	1.50
Torrid	B-070	Automatic Heat Control Plug	1.00
	B-080	Safety	1.00
Waage		3 & 4 Heat Plug Only	.60
Westinghouse	299423	Appliance Plug—No Switch	.75
	373656	"With"	1.00

## PANEL BOARDS OR FUSE CABINETS

## FRANK ADAM

All 30 Amp.—S. P.—NEC Fuses	Branch	Branch	Branch	Branch
"FBX" Safety Type Fuse Boxes	\$ 3.80	\$ 5.00		
"NR"	Main Cable Lug Only		\$ 8.90	\$11.90
	Solid Neutral	11.15	13.40	15.60
NR3G	Main Cable Lug Only		16.50	19.80

All for Plug Fuses	Circuit	Circuit	Circuit	Circuit	Circuit
66104-12 NP —One Fuse 3 Wire Serv.	\$ 5.20	\$ 7.40	\$ 8.90	\$10.40	\$11.90
66204-12 P —Two Fuse 2 and 3 Wire Serv.	7.50	11.15	13.35	15.60	18.60
66304-12 NEP —Oth. Fuse with Switch Pl.	7.10	10.30	12.80	16.50	19.15
66404-12 EP —Two Fuse with Switch Pl.	10.30	15.25	19.15	21.80	25.15

## BULLDOG FUSESTERS

No. Description	2	4	6	8	10	12
CBS Surface Black Finish with shield	\$1.80	\$2.30	\$3.90	\$7.00	\$9.75	\$10.30
BOS " Black Finish without Shield	1.65	2.15				
BF Flush Luminized Finish	2.50	3.70	5.35	8.75	10.30	11.75
BFF " Black Finish	2.00	2.75	4.70			
BSF " Lum. Finish with Toggle Switches	6.60	9.00	13.20	15.70	19.80	
BSSF " Lum. Finish with one 30 A. Safetofuse	20.50	22.00	31.75	33.35	35.00	
BSSF " Lum. Finish with one 60 A. Safetofuse	21.50	22.30	32.25	33.75	35.40	
BKF " Lum. Finish with Pull Box	6.60	9.00	14.85	17.35	19.80	

## All-Steel-Equip. Co., FUSE CABS

Style & No.	Description	2	4	6	8	10	12
C-702-4-6	Surface Small Type	\$1.80	\$2.55	\$3.95			
C-902-4-6	Flush Small Type	2.10	2.80	4.85			
D-3004 to 3074	Surface Type Single Fuse	3.20	5.10	\$7.50	\$10.10		
D-3034 to 3094	Flush Type	3.75	5.60	9.00	12.10		
D-4002 to 4012	Surface Type Double Fuse	3.20	5.10	10.10	23.00	36.00	
D-4022 to 4032	Flush Type Double Fuse	3.75	5.60	12.10	27.00	45.00	
DS-3304 to 4304	Flush or Surface-Sgl.	6.90	9.25	13.80	21.00		
DS-3502 to 4502	Flush or Surface-Double	6.90	9.25	21.00	34.50	70.00	

## KILLARK

Standard Flush Type Panels	2	4	6	8	10	12
Series KRP-2 to 12 Inclusive	\$2.00	\$2.90	\$4.75	\$6.50	\$8.50	\$10.75

## CUTLER-HAMMER—Fuse Panels—Flush Mounting

Circuits	2 Cir.	4 Cir.	6 Cir.
Black Finish Series 4355 H1 to 6	\$ 1.90	\$ 2.60	\$ 4.65
Aluminum Finish Series 4355 H1 to 6	2.40	3.45	5.35
Circuits	8 Cir.	10 Cir.	12 Cir.
Black Finish Series 4355 H1 to 6	\$ 8.20	\$ 9.95	\$10.20
Aluminum Finish Series 4355 H1 to 6	8.65	10.05	11.65

## G. E. or TRUMBULL—Residence Panel Boards

Surface or Flush Mounting	4	6	8	10	12
Single No 3104 to 3212					
Flush Mtg. or Fusing					
2906 to 2912					
Surface Mtg.	\$2.80	\$ 4.55	\$ 9.65	\$11.25	\$13.00
Double No. 3404 to 3412					
Flush Mtg. or Fusing					
2704 to 2712					
Surface Mtx.	9.10	12.40	18.15	23.10	26.40

## "KILLARK" Fuse Cabinets

Standard Flush Type Panels	2	4	6	8	10	12
Circuit. Circuit. Circuit. Circuit. Circuit. Circuit.						
Series KRP-2 to 12 Inclusive	\$2.00	\$2.90	\$4.75	\$6.50	\$8.50	\$10.75

## SQUARE D—Fuse Cabinets

Series 37000 to 39000	2	4	6	8	10	12
Circuit. Circuit. Circuit. Circuit. Circuit. Circuit.						
Flush Series 37000 Black	\$1.85	\$2.30	\$4.50	\$7.90	\$ 9.50	\$11.15
" 37000 Aluminum	2.35	3.35	5.10	8.30	10.00	11.15
Surface Series 39000 Black	1.85	2.50	4.50	7.90	9.50	11.15
NOTE: 2 & 4 Circuit Flush Type arranged for mounting direct to front side of studding with channels for lathe ends, each						\$0.20

## Combination Fuse Cabinets

60 Amp. Fuse Break and 30 Amp. Circuit	2	4	6	8
Only Circuit. Circuit. Circuit. Circuit.				
Flush Mounting Aluminum	\$7.45	\$12.40	\$14.00	\$23.00
Surface "Black"	6.45	10.75	11.55	12.40

## WADSWORTH Fuse Cabinets &amp; Panelboards

All Dead Front Single Fusing	2	4	6	8	10	12
Circuit. Circuit. Circuit. Circuit. Circuit. Circuit.						
Surface Mtg.	\$2.30	\$3.00	\$4.85	\$5.75	\$7.55	\$11.55
Flush Mtg Hanger Support	2.85	3.80	6.10	7.55	10.20	12.00
Flush Type for Tyle Sw.	6.85	11.10	13.75	16.40	19.85	
Surface Mtg. Enc. Panel Boards 100 Amp. Mains						
Flush	\$22.00	\$25.35	\$32.00			
	24.75	28.00	34.65			

## WESTINGHOUSE Junior Residence Type

Junior Residence Panels	2	4	6	8	10	12
Circuit. Circuit. Circuit. Circuit. Circuit. Circuit.						
No. K-64012-21 & 64052-61	\$2.50	\$2.70	\$3.75	\$5.35	\$8.75	\$10.30
Junior Building Panels for Toggle Switches						
No. K-64034-42 & 64074-81	6.60	9.90	13.20	15.70	19.80	

## PLATES &amp; PLUGS, RECEPTACLE

## PLATES—For Flush Receptacles

All Types	Composition	.040 Gauge	.060 Gauge
Single or Duplex Plate	\$0.20	\$0.15	\$0.20
Lift Cover Plate 1 Outlet		.30	.35
Radio Plates—Sgle. or Duplex	.25	.15	.20
Telephone "One Outlet	.20		.35
"Double	.20		.45
Disappearing Door Plate Sgle.			.75
"Duplex			1.15
Chapman Receptacle			.75
Blank Plates One Gang	.20	.25	.30
Bull's Eye Plate One Gang	.75	.60	.70
"and 1 Switch Comb.	.80		.90
"and 1 Recept.			.90
Switch and Sgle. or Duplex Recept.	.40	.50	.60
Steel Plates for 30 and 40 Amp. Polarized Receptacles			.75
Solid Brass Plates 30 and 40 Amp.			1.80
Screwless Plates Bakelite for Hubbell Receptacles			.55
Porcelain Enamelled Plates for Sgle. or Duplex Receptacles			.25
Mirror Glass Plates for Single Receptacle			1.00
DeLuxe Metal Plates for Single or Duplex Receptacles			.90
DeLuxe Wood Inlaid Plates for Single or Duplex Receptacles			2.35

## CAPS &amp; PLUGS For Receptacles

Blades	Price
10 Amp. Pony Composition Cap	\$0.10
"Standard	.10
10 " Cap With Extension Knob	.20
10 " Brass Covered Cap	.40
10 " Steel	.15
10 " Cord Grip Cap	.30
10 " Tandem Blade Comp. Cap	.25
Radio Jack Plug	.25
Chapman Plug Reversible Compos.	.85
Chapman Plug Porcelain	.45
Disappearing Door Plug Brass Top	1.00
10 Amp. 2 Wire Polariz. Comp. Cap	.25
10 " 2 " Cord Grip Cap	.40
20 " 2 " Comp.	.50
30 " 2 " Comp.	.55
30 " 2 " Cord Grip	1.65
10 " 3 " Comp.	.45
10 " 3 " Cord Grip	.65
20 " 3 " Comp.	.70
20 " 3 " Cord Grip	1.00
30 " 3 " Comp.	.75
30 " 3 " Heavy Duty Angle Cap	1.50
Lamp Only 110 Volts for Bull's Eye Receptacles	.65

## RECEPTACLES, FLUSH

## STANDARD RECEPTACLES OR CONVENIENCE OUTLETS

Without Plates	Plates Extra	Price
Shallow Bakelite Side Wired Single		\$ .25
" " " " Duplex		.35
" " " " Single		.25
" " " " Duplex		.35
Deep Bakelite Top		.40
" " " " Duplex		.60
" " " " Single		.40
" " " " Duplex		.60





## GROUND RODS

Size	Copper-weld	Galvanized Not Wired	Galvanized Wired	Size	Copper-weld	Galvanized Not Wired	Galvanized Wired
Price	Price	Price	Price	Price	Price	Price	Price
3/4"x5 Ft.	\$ .80	\$ .30	....	3/4"x6 Ft.	\$2.30	\$ .85	\$1.00
3/4"x6 "	.70	.35	....	3/4"x8 "	3.00	1.10	....
3/4"x8 "	1.30	.50	\$ .65	3/4"x10 "	3.70	....	....
3/4"x10 "	1.50	.55	.70	3/4"x12 "	2.70	....	....
3/4"x12 "	1.95	....	....	3/4"x14 "	4.20	....	....
3/4"x16 "	2.40	....	....	3/4"x18 "	5.20	....	....
3/4"x20 "	1.95	....	....				

## RAWPLUGS—Standard Types

Number of Rawplug	Drill Hole	For Screw No.	Price Each Any Length	Number of Rawplug	Drill Hole	For Screw No.	Price Each Any Length
6.....	3/8"	6-7	\$ .02	14.....	3/8"	14	\$ .06
8.....	3/8"	8-9	.03	16.....	3/8"	16-18	.08
10.....	3/8"	10-11	.04	20.....	3/8"	20-22	.12
12.....	3/8"	12	.05				

## Rawplugs for Lag Screws

Size of Lag Screw	Size of Drill Hole	Size of Rawplug	Length	Price Each
1/2"	3/8"	1 1/2"	2"	\$ .13
3/4"	1/2"	2"	2 1/2"	.15
1"	5/8"	2 1/2"	3"	.18
1 1/4"	3/4"	3"	3 1/2"	.20
1 1/2"	7/8"	3 1/2"	4"	.23
1 3/4"	1"	4"	4 1/2"	.26
2"	1 1/8"	4 1/2"	5"	.30

NOTE: For Expansion Shields—See Page PL-10.

## METAL REFLECTORS—Galsteel Diffusers

	Opal Glass	Daylight Globe
Threaded Pendant Hood.....	15" \$ 9.95	15" \$13.80
Ceiling Hood.....	15" 9.95	15" 13.80
Detachable Can., Pend. Hood.....	10.25	14.10
Detachable Can., Ceiling Hld.....	10.25	14.10
Globes Only.....	10" 2.50	12" 3.05
	12" 3.05	16" 7.05
	16" 3.10	20" 4.80

## STANDARD INDUSTRIAL REFLECTORS

Prices do not include holders or sockets

Style	For Lamp Size	Diameter Bowl	With Plain Collar for Holders	With Neck Reflector Sockets	Complete With Sockets
R. L. M. DOME TYPE	25-40 W.	10"	\$1.40	2.00	\$3.55
	50-60 "	12"	2.10	2.35	3.65
	100 "	12"	2.10	2.35	3.65
	150 "	14"	2.45	2.65	3.90
	200 "	16"	2.90	3.10	4.75
	300-500 "	18"	4.00	4.20	....
DEEP BOWL TYPE	750-1000 "	20"	5.85	6.40	....
	25-40 "	8"	1.25	....	....
	50-60 "	10"	1.70	....	3.20
	100 "	12"	....	....	3.45
	150 "	14"	1.75	2.00	....
	200 "	16"	2.00	2.20	3.65
SHALLOW DOME	300-500 "	18"	2.45	2.65	4.20
	750-1000 "	20"	4.00	4.20	....
	25-40 "	10"	1.40	1.80	....
	50-60 "	12"	1.60	2.00	3.65
	100 "	14"	1.90	2.15	3.90
	150 "	16"	2.80	3.10	4.20
ANGLE TYPE	200 "	18"	....	....	5.10
	25-40 "	7"	1.30	....	....
	50-60 "	8"	1.60	....	....
	100 "	10"	1.60	2.50	....
	150-200 "	12"	2.15	3.05	....
	300-500 "	14"	3.85	5.05	....
Holders for above—For Standard Brass Sockets.....	750-1000 "	16"	6.05	6.90	....
					Each \$0.20
					Pore. or Alum. Sockets or Box Recept.....
					Sockets " " Add 10% to manufacturers' list prices.

## SOCKETS

Complete With	Pend. Cap	3/4" Brass	3/4" Brass	3/4" Brass	3/4" Brass	3/4" Brass	3/4" Brass	3/4" Brass	Pend. Cord Grip
Keyless	\$ .25	.25	.40	.45	.65	.70	.80	.85	.45
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40
Keyless	.30	.30	.35	.40	.60	.65	.75	.80	.40
Key	.30	.30	.35	.40	.60	.65	.75	.80	.40
Push	.30	.30	.35	.40	.60	.65	.75	.80	.40

### Sockets, Heavy Duty

Copper		All Keyless		Price
1	Piece with $\frac{3}{8}$ or $\frac{1}{2}$ Nipple.....			\$0.65
1	" " Cord Grip.....			.65
1	" " $\frac{1}{2}$ Nipple.....			.80
1	" " $\frac{3}{4}$ Nipple.....			.80
2	" " Cord Grip.....			.80
Shadeholders for above sockets.				Price
2 1/4	Aluminum or Copper Extra.....			\$0.35
1 1/4	" " " ".....			.50
1 1/4	" " " ".....			.65

Benco Keyless Socket	with Clamp Ring #4700 to 4703 Medium Base	\$1.25
	" " without "	1.05
" Pull	" " with "	.80
Benco Keyless Socket	Copper or Alum. #4200-1-4-5 & 4335 & 7.	7.50
	Brass #4202-4203-4336.	.90
" Pull	#4207-8 4225-26 4236-37 Brass, Copper or Alum.	1.50
" (Mogul)	Copper Clad #4210-4297	2.00
Benco Threaded Holders		
Polish. Alum. Weatherprf—	#4215 & 4217	\$ .35 \$ .60
Copper	— #370-72 & 73.	.40 .60 \$1.00
Brushed Brass	— #377-79 & 80.	.40 .60 1.00

	Without Yoke	% or 1/2 Iron Yoke	% or 1/2 Alum. Yoke
One Piece Socket with Lamp Grip.....	\$1.00	\$1.15	\$1.60
Two Piece Socket with Lamp Grip.....	1.20	1.45	1.70

Porcelain or Similar		With Type X or XR Fitting	
Medium Base Keyless	Tapped $\frac{3}{4}$ - $\frac{1}{2}$ " No. 4650-51 & 65	\$1.20	
"	" Shock Absorb. $\frac{3}{4}$ - $\frac{1}{2}$ " No. 4652-53 & 66	1.35	
"	" Shock Absorb. $\frac{1}{2}$ - $\frac{1}{4}$ " No. 4670-77-78-80-83	1.45	
"	" Shock Absorb. Self Lock No. 4548-49-50-52-53	1.90	
"	" Pull Chain No. 4534-35 & 4660-61-67	2.05	
Mogul Base Keyless	Shock Absorbing No. 4670-71-72	1.95	
"	" Shock Absorb. No. 4673-74-75-76	2.05	
If X or XR Fittings not supplied on above sockets deduct		.45	

Plates & Boxes Extra		Price
Square Handle Porcelain Cup—Sgl. Pole.....		\$ .35
	Dble.....	1.00
	3 Way.....	.50
	4.....	3.50
Composition Cup—Sgl. Pole.....		.90
	Dble.....	1.40
	3 Way.....	1.35
	4.....	3.50
20 Amp. Sgle. Pole.....		.50
20 Amp. Dble. Pole.....		1.60
Round Handle Porcelain Cup—Sgl.....		.35
	Dble.....	1.00
	3 Way.....	.50
	4.....	3.00
New Circuit Type		
Twin-2 Sgle. Pole Switches.....		\$1.35
Twin-1 Sgle. Three Way.....		1.60
Twin-2 Sgle. 3 Way Switches.....		1.60
Triplet-3 Sgle. Pole Switches.....		2.00
Triplet-2 Sgle. & 1-2 Way Switches.....		2.20
Lock Type Porcelain Cup—Sgl. Pole.....		1.50
	Dble.....	2.20
	3 Way.....	1.85
	4.....	3.80
EXTRAS—For Luminous Tip add for Each Handle.....		.40
For Glo Circuit add for Each Switches add for Each.....		1.00

Description		Price
10 A. D. P. Switch—Pilot Lt.—.060 Plate		\$3.00
10 " " " " Receptacle " "		1.75
20 " " " " 15A " "		2.50
Switch—Tap & Pilot Light with " "		3.35
" " " " & Receptacle " "		1.75

	1	2	3	4
	Gang	Gang	Gang	Gang
Stamped Brass Sprayed Finish .040 Thick.....	\$ .15	\$ .30	\$ .45	\$1.10
" " " Brush Brass .040 ".....	.20	.40	.60	1.35
" " " Sprayed .060 ".....	.25	.50	.75	1.35
" " " Brush Brass .060 ".....	.30	.60	.90	1.60
Bakelite or Composition Moulded.....	.20	.60	.80	.80
Twin & Triple B. B. or Bakelite Plates.....	.20	.25	.25	
Comb. Switch and Recept.-Moulded Comp.....	.30	.40	....	
" " " Pilot Light.....	.75	....	....	
Hubbell Bakelite Screwless Plates.....	.60	1.10	1.60	2.25
Bryant DeLuxe Wood Inlaid any Finish.....	2.75	4.40	7.70	
" " " All Metal.....	1.25	1.75	2.45	2.45
Guth Porcelain Enamel Plates.....	.25	.60	....	
Glass Mirror Plates.....	1.00	1.75	3.50	3.25
Blank Plate .040 Brush Brass Finish.....	.30	.60	.90	

Plate & Boxes Extra		Price
Standard Shallow Type Porcelain Cup—Single Pole.....	Double.....	\$0.30
.....	3 Way.....	1.00
.....	4.....	.50
.....	.....	3.00
Deep Type Porcelain Cup—Single Pole.....	Double.....	.75
.....	3 Way.....	1.10
.....	4.....	1.10
.....	.....	3.30

Special High Grade Composition Cup—Single Pole.....	Price
.....Double.....	1.70
.....3 Way.....	1.70
.....4 Way.....	3.70
Lock Type Porcelain Cup—Single Pole.....	1.60
.....Double.....	2.20
.....3 Way.....	2.20
Electroliner Non-Indicating.....	5.80
.....Indicating.....	.75
Extra for Luminous Button Add Per Switch.....	1.90

With Plates		Price
Bryant 117 D. P. Indicat. Switch	Flush Receptacle & .060 Plate.....	\$2.35
413	One Push Switch-Bulls Eye and Solid Plate.....	4.50
518	Disap. Door Recp. Bulls Eye—Solid Plate.....	8.25
465	D. P. Flush Switch & Pilot Lamp .060 Plate.....	3.65
467	Flush Switch—Flush Recep.—Bulls Eye—Solid Plate.....	5.75
558	Duplex.....	6.00

[illegible]

			5	10	20	30
Poles	Volts	Type	Amp.	Amp.	Amp.	Amp.
Single	125	Non-Indicating.....	Pony	\$ .35	...	...
"	"	Indicating.....	"	.40	...	...
"	"	Non-Indicating.....	Standard	\$ .75	\$1.40	\$2.15
"	"	Indicating.....	"	.85	2.50	2.30
Double	250	Non-Indicating.....	"	.90	1.05	2.20
"	"	Indicating.....	"	1.00	1.20	2.40
Triple	"	Non-Indicating.....	"	"	2.95	3.75
"	"	Indicating.....	"	"	3.10	3.85
3-Way	125	Non-Indicating.....	"	.90	1.50	2.40
4-Way	"	Non-Indicating.....	"	1.35	3.00	4.60
Electrolux	"	Non-Indicating.....	"	1.45	1.45	2.20
"	"	Indicating.....	"	1.65	1.65	2.35

Poles	Volts	Type	Size	5	10	20	30
Single	125	Non-Indicating.....	Pony	Amp.	Amp.	Amp.	Amp.
"	125 <td>Indicating.....</td> <td>"</td> <td>\$.55</td> <td>.....</td> <td>.....</td> <td>.....</td>	Indicating.....	"	\$.55	.....	.....	.....
"	125 <td>Non-Indicating.....</td> <td>Standard</td> <td>1.00</td> <td>1.00</td> <td>1.00</td> <td>1.00</td>	Non-Indicating.....	Standard	1.00	1.00	1.00	1.00
"	125 <td>Indicating.....</td> <td>"</td> <td>.65</td> <td>1.00</td> <td>1.80</td> <td>2.50</td>	Indicating.....	"	.65	1.00	1.80	2.50
Double	250	Non-Indicating.....	"	.75	1.20	2.40	2.80
"	250	Indicating.....	"	1.10	1.35	2.00	3.00
3-Way	125	Non-Indicating.....	"	.95	1.35	2.60	3.00
"	250	Non-Indicating.....	"	1.50	3.05	.....	.....
Electroliner	125	Non-Indicating.....	"	1.50	1.50	.....	.....
"	125	Indicating.....	"	1.70	1.70	.....	.....

	Metal or Composition Covers			
	Single Pole	Double Pole	3 Way	4 Way
125-250 Volt				
5 Amp. Closed or Slott. Base.....	\$ .35	\$ .85	\$ .80	\$1.40
5 Amp. with Outlet Box Cover.....	.55	....	.90	....
10 Amp. Closed or Slott. Base.....	.80	1.10	1.25	....

	Metal Covered		All Porcelain	
	5 Amp. 125 Volts	Indicating	Indicating	Non-Indicating
Single Pole.....	\$ .65	\$ .60	\$ .75	\$ .70
Double.....	1.20	1.10	1.20	1.10
Three Way.....	1.00	1.00	1.20	1.10
Electrolier.....	1.50	1.50	...	...

Handles—Standard Type Each	\$ .12	—Ratchet Type.....	.20
Bases—Porcelain 5 Amp.	\$ .12	—10 Amp.	.15
		—20 Amp.....	.30
Covers—10 Amp & Under Metal	.15	—Porcelain.....	.20
		Over 10 Amp.....	.30

Small Socket Type		Price
Ceiling—Bottom Pull		\$1.00
Wall—Side Pull		1.00
Rosette—Side Pull		1.00
Fixture—Bottom Pull		1.25
	1/2" Brass Cap	.10
	3/4" Brass Cap	.30
	1" Brass Cap	.20
Additional	Small Cleat Base	.40
for	Small Slotted or Concealed Base	.35
Caps and Bases	Large Concealed Base	.40
for	Wood Moulding Base	.35
Above Switch	Small Box Base Covered	.50
Bodies	3 1/2" Box Base Covered	.65
	3" Box Base Brass Covered	1.10
	3 1/2" Box Cover with Ring	.20
	4" Box Cover with Ring	.25

## Switches, Pull Cord

### CEILING PULL SWITCHES MOUNTED ON OUTLET BOX COVERS

Arrow—H & H or Equal

5020	For 3/4" Outlet Box Single Pole.....	\$2.25
2021-25	" " " " D. P.—3 & 4 Way-2-3 Circuit.....	2.75
5028	" " " " Single Pole.....	2.40
2027-31	" " " " D. P.—3 & 4 Way-2-3 Circuit.....	2.85

### HEAVY DUTY PULL CORD SWITCHES, METAL COVER

With 8 Feet Heavy Cord

S. P. with Small Porc. Slotted or Solid B.....	\$2.30
D. P. with Small Porc. Slotted or Solid B.....	2.00
3 & 4 Point with Small Porc. Slotted or Solid B.....	2.00

These switches can be furnished with side or bottom open, at same price.

### TYPE "O" PULL SWITCHES

#### For Ceiling Fixtures or Ceiling Fans

Single or Double Pole—3 & 4 Point Electroler & Motor Control—Similar to Bryant #2473 to 2490 with 3/4 Caps, cord & Ball Each.....	\$3.00
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### CANOPY SWITCHES

Rotary Canopy Switches any style any make (except below).....	\$ .35
Tumbler Canopy Switches similar to G. E. 2381.....	.55
Pull Type P & S—3316 or 17—Arrow 340—Bryant 666.....	.90

### LEVOLIER PULL SWITCHES

McGill Co.

Two-Lite Canopy or Fixture Switch #50-51-52.....	\$1.00
Link Switch #59.....	1.00
Conduit Box & Fixture Switch #61-62 & 63.....	1.00
Switch Hickey 64 & 64 A for above.....	.15

### PENDANT SWITCHES

#### With Brass Pendant Cap

Brass Shell Pend. Cap Side Button.....	\$ .65
" " " " Bottom.....	.90
" " " " Type "O".....	2.50
All Porcelain.....	2.60
" " " " Side.....	.85
Pendant Switch & Current Tap, Comp.....	1.00

### FEED THROUGH SWITCHES

Metal Feed Thru Switch.....	\$ .50
Composition Feed Thru Switch, Flat Back.....	.50
Composition Feed Thru Switch, Egg Shape.....	.50
Composition Feed Thru Switch, Pony.....	.45

### DOOR SWITCHES

Open Circuit—No Box.....	\$3.70
Closed.....	3.70
Iron Box for Door Switch.....	.90

### DOOR SWITCHES & OPENERS

#### Edwards—commonly used types

#0 Door Opener Mortise Type \$ 2.75	#152 Rim Type Flush.....	\$ 6.00
48 " " " " 31.25	#152 for Surface Conduit.....	25.25
48A " " " " 34.25	154 Mortise Type.....	5.75
50 " " " " 31.25	153 Plate Type.....	7.00
50A " " " " 34.25	174 Door Switch.....	8.65
51 " " " " 34.25	2000 Box for 174 Door SW.....	1.30
51A " " " " 35.25	1641 Opener Mortise Type.....	10.50
52 " " " " 38.25		
#259—Latch for #52.....	3.50	

#### Partrick & Wilkins commonly used types

Mortise Type.....	\$2.75
Rim Type.....	\$4.25

### MOTOR STARTING SWITCHES

#### For Small A. C. Motors

##### Arrow or H & H

	Double Pole 5 Amp. 600 Volt	Double Pole 30 Amp. 250 Volt	Triple Pole 30A. 250V—20A 600 V.
	Price	Price	Price
3/4 H. P.....	\$2.20	\$2.40	\$4.90
1 H. P.....	2.30	2.30	5.10
1 1/2 H. P.....	2.45	2.45	5.30
2 H. P.....	2.70	2.70	5.55

#### Bryant

Sentinel Circuit Breakers Single Pole for Protection of Fractional H. P. Motors No. BSB-1-2-4-6-8-10-12 and 14.....	\$2.65
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#### Trumbull

##### Small Motor Starting Switches

No. 2221 —2 Pole 30A. 125 Volt—20A. 250 Volt—3A. 600 Volt without Overload Protection.....	\$2.00
No. 2361 —3 Pole 30A. 125-250 Volt—3A. 600 Volt without Overload Protection.....	5.00
No. 2222-6—Single Pole up to 1/2 H. P. 230 Volt A. C. and 1/4 H. P. 115V. A. C. with Thermostatic Overload Protection.....	2.90

## SWITCHES, KNIFE, ENTRANCE & PANEL

### ENTRANCE & PANEL SWITCHES

30 Amp. 125 Volts, Plug Fused

Description	Location of Fuses	Price
Double Pole, Rev. Blades.....	Top	\$ .80
" " " " " " Bottom.....	Bottom	.80
" " " " " " Large Size.....	Top	.85
" " " " " " " " Bottom.....	Bottom	1.25
Triple " " " " " " " " Top.....	Top	1.30
" " " " " " " " Bottom.....	Bottom	1.30
Double Pole Single Branch.....	Top	1.50
" " " " " " " " Bottom.....	Bottom	1.50
Double Pole—Double Branch Vert. Mains.....	Top	3.00
" " " " " " " " Horiz.....	Top	3.00
Trip. to D. P. Double Branch Vert. Mains.....	Top	3.15
" " " " " " " " Horiz. Mains.....	Top	3.15

Electrical Contracting, May, 1931

### BABY KNIFE SWITCHES—Any Make

Any Make	Porcelain Base 125 Volt	Slate Base 250 Volts
	15 Amp. 30 Amp.	15 Amp. 30 Amp.
Single Pole Single Throw.....	\$ .50 \$ .60	\$ .60 \$ .70
" " Double.....	.85 1.00	1.00 1.25
Double " Single.....	.60 .70	.70 .85
" " Double.....	1.00 1.30	1.30 1.40

### TYPE "C" OPEN KNIFE SWITCHES

#### Slate Base Front Connected

Front Connected Slate Base	Not Fusible	Fusible
	2 Pole	2 Pole
Sgl. Throw 30 A. 250 V. Only.....	\$1.15 \$1.65	\$2.25 \$2.75
" " " " 250 & 500 V. AC.....		
" " " " 30 A.....	1.75 2.65	3.50 \$1.75 \$2.65 \$3.50
" " " " 60 A.....	2.00 3.00	4.05 2.95 4.45 5.95
" " " " 100 A.....	4.10 6.20	8.25 6.00 9.05 12.05
" " " " 200 A.....	7.45 11.15	14.85 11.15 16.75 22.25
Dbl. Throw 30 A. 250 V. Only.....	1.90 2.95	4.20 5.00 5.60 8.00
" " " " 250 & 500 V. AC.....		
" " " " 30 A.....	2.80 4.40	6.35 3.65 5.60 8.00
" " " " 60 A.....	3.30 5.10	7.25 5.60 9.00 12.35
" " " " 100 A.....	7.40 11.40	16.15 12.20 19.85 26.85
" " " " 200 A.....	12.35 19.15	25.60 21.45 34.35 43.90

## SWITCHES, REMOTE CONTROL

### TYPE "F"—"DIAMOND H"

Amps	Single Pole Cat. No.	Price	Double Pole Cat. No.	Price	Three Pole Cat. No.	Price	Four Pole Cat. No.	Price
30	716	\$ 30.00	730	\$ 36.00	790	\$ 43.20	610	\$ 54.00
60	717	43.00	740	48.00	800	54.00	620	68.00
75	718	50.00	750	55.00	810	60.00	630	76.00
100	719	56.00	760	59.00	820	67.00	640	87.00
150	723	100.00	770	108.00	830	124.80	645	146.00
200	724	112.00	780	122.40	840	139.20	650	168.00

## SWITCHES, RESIDENCE, METER SERVICE, INDUSTRIAL, ETC.

### SQUARE D

For Cadmium Plated or Galvanized Switches Add 40%

### SMALL SERVICE ENTRANCE SWITCHES

#### 30 Amp. "Square D" Switches Residence Type

Numbers	Volts	Description	2 Pole	3 Pole
97211-97311	125	For Plug Fuse Solid Neut.....	\$1.70	\$2.50
99211-99311	125	Neut. Fused.....	1.75	3.00
78211-78311	125	" " " " Meter Test.....	2.55	4.10
1211	125	Porc. Entr. Switch.....	1.80	
97251-97351	250	Encl. Fused Solid Neut.....	1.70	3.20
99251-99351	250	" " " " Fused Neut.....	2.50	4.35

### METER SERVICE SWITCHES

#### Branch Fuses, Cabinets Attached and Wired Accessible Main Fuses

Cat. No.	Amps.	Volts	Poles	Neutral	Main Fuses	Branch Fuses	Price
SK-2188.....	30	125	2	Solid	1	4	\$6.75
SK-2189.....	30	125-250	3	"	2	4	7.75
SK-2187.....	30	125	2	"	1	2	6.00
SK-2197.....	30	125	2	"	2	4	7.25
SK-2233.....	30	125	2	"	2	2	6.50

### ENTRANCE RANGE AND LIGHTING SWITCH

No. 38372.... Range & Lighting Switch 1-60A. 250V. & 4-30A. 125V. Br. #23.80	
No. SK-2290. Back Meter Plate & Switch Support for Above.....	2.00

### SERVICE SWITCH

#### Two Meter Combination

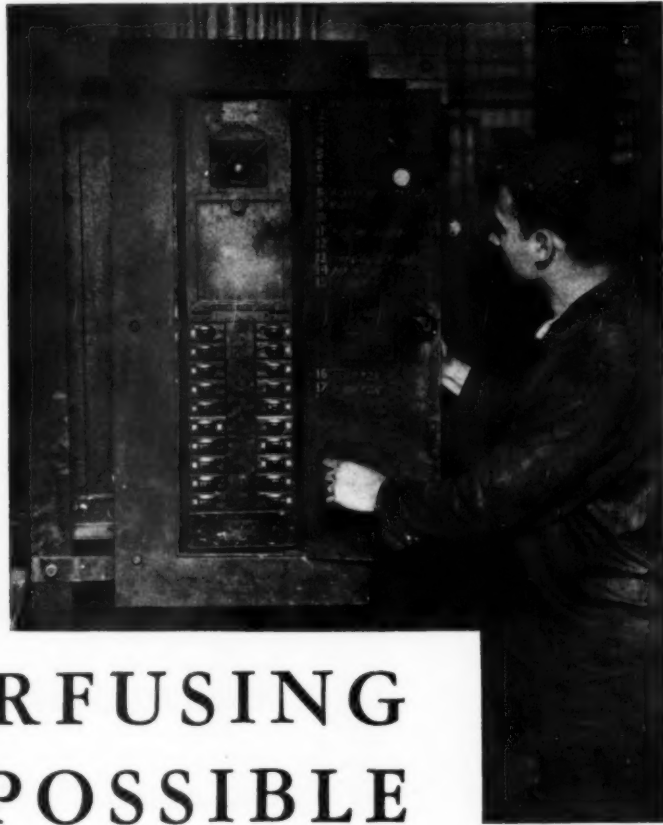
No. 38312 For Range—Water Heater—Lighting Circuits.....	\$7.35
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### METER SERVICE SWITCHES

#### "Square D" Accessible Main Fuses Without End Walls

Amps.	Poles	Fused For	Neutral	Meter Test Type	Price	Non-Meter Test Type	Price
30	2	2 Plug	Fused	30211	\$ 4.00	10211	\$ 3.65
30	2	1 " "	Solid	30231	3.50	10231	3.30
30	3	2 " "	"	30331	4.50	10331	4.00
30	3	2 " "	Unfused	30381	5.20	10381	5.20
30	2	2 Enc.	Fused	30251	4.80	10251	4.60
30	2	1 " "	Solid	30271	3.90	10271	3.90
30	3	2 " "	Unfused	30361	4.80	10361	4.25
30	3	2 " "	Solid	30371	4.80	10371	4.60
60	2	2 " "	Fused	30252	15.10	10252	14.20
60	2	1 " "	Solid	30272	14.20	10272	13.30
60	3	2 " "	Unfused	30362	21.65	10362	20.55
60	3	2 " "	Solid	30372	16.00	10372	15.05
100	2	2 " "	Fused	30253	23.85	10253	23.00
100	2	1 " "	Solid	30273	23.85	10273	22.10
100	3	2 " "	Unfused	30363	30.90	10363	29.35
100	3	2 " "	Solid	30373	25.60	10373	23.85





*Nofuze panelboards are installed in every type of building. This board is in the Huntington, West Virginia shops of the Chesapeake & Ohio Railroad.*

# OVERFUSING IS IMPOSSIBLE *with NOFUZE Panelboards*

**E**LECTRICAL contractors know of the dangers of overfusing—know, too, how easily fuses can be blocked and the resultant troubles blamed on “faulty wiring”. That is why so many of them are recommending Westinghouse Nofuze panelboards for every type of building.

Nofuze panelboards are tinkerproof. They do not open the circuit on slight momentary overloads, but protect the wiring at all times and under all conditions. Their calibration cannot be altered, their action cannot be blocked.

Further, if an abnormal overload does open the circuit, anyone can restore service by a flip of a handle.

Nofuze panelboards are installed in many famous buildings from Maine to California—and the list is ever growing larger. On future jobs, suggest Nofuze panelboards as the safest, most convenient control for lighting and small motor circuits.

Ask the Westinghouse office or agent jobber near you for complete information.

---

*Service, prompt and efficient, by a coast-to-coast chain of well-equipped shops*

---

## Westinghouse

T 31793



TUNE IN THE WESTINGHOUSE PROGRAM OVER KDKA, KYW, WBZ AND ASSOCIATED N. B. C. STATIONS SUNDAY EVENINGS.

# But They Do Need R • A • D • I • O Outlets!

**A Radio  
Electric  
Outlet**  
with Distinctive  
Selling Features

**YAXLEY**  
No. 241



Special plates in any finish desired; with individual decorations and markings for exclusive installations.

Listed as Standard by Underwriters' Laboratories  
An Extra Electrical Receptacle for Attaching Lamp or Other Appliance  
Proper Separation of Aerial and Ground  
Proper Separation of Radio and Electrical Elements  
Elimination of Danger of Making Wrong Connections  
All Parts Carried on Mounting Strap with Ears for Fastening to Standard Wall Box or Plaster Lath



It is true that we have been catching up on the wiring of old houses, and that has made a difference in the number of wiring jobs, but that situation does not affect the market for the sale and installation of radio outlets.

Here is a new market, hardly touched. Practically every wired home needs several radio outlets. In apartment buildings, hotels, hospitals and schools the installations run into the hundreds.

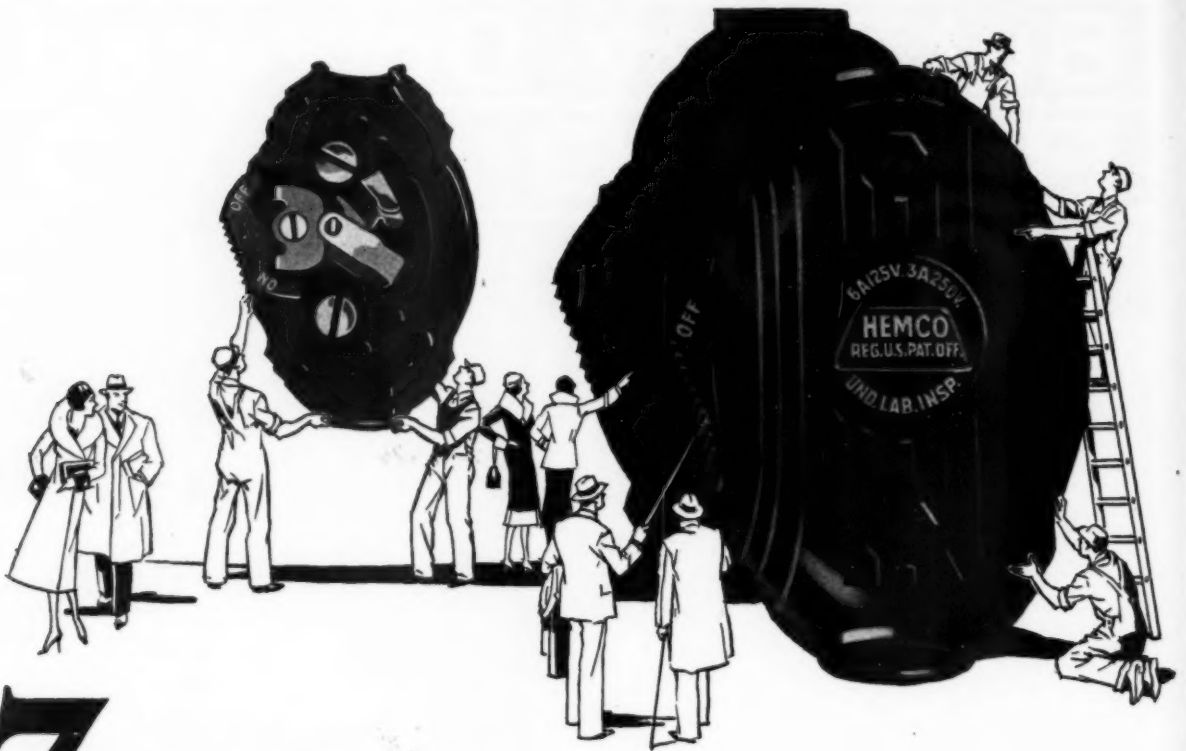
You can sell Yaxley Radio Outlets to the owner of a radio set because the name is more familiar.

Throughout the development of modern radio Yaxley Approved Radio Products have been accepted by manufacturer and user as standard equipment for the vital parts of radio receivers.

Send for Radio Convenience Outlet Catalog

**YAXLEY MFG. CO.** 1528 West Adams Street,  
Chicago, Illinois

RADIO CONVENIENCE OUTLETS FOR EVERY RADIO NEED  
RHEOSTATS—VOLUME CONTROLS—RESISTANCES—JACKS—PHONE PLUGS—SWITCHES



# 7 BIG Points

## of the NEW BRYANT Straight Through SWITCH

1. Modernistic Design.
2. Body of Brown Bakelite.
3. Straight-through feed so designed as to afford strain relief for cord.
4. Milled Edge Indicating Switch Handle of Brown Bakelite.
5. So quiet in operation as to be practically noiseless.
6. Ample Space is provided in Wiring Channels.
7. Binding Screws with large heads.

THERE'S a tremendous market for this new item. You'll show a real profit by equipping appliance cord sets with this Switch. Specify Catalog No. H271 on your orders.



# BRYANT

## SUPERIOR WIRING DEVICES

*Manufactured by*  
THE BRYANT ELECTRIC COMPANY, BRIDGEPORT, CONN.

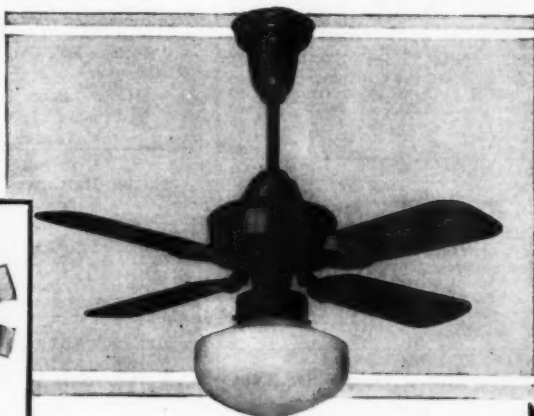
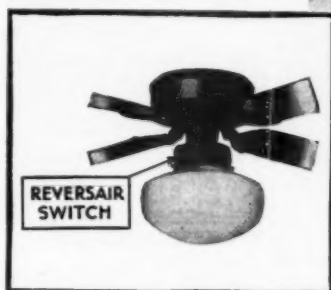
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MANUFACTURERS OF "SUPERIOR WIRING DEVICES" SINCE 1888-MANUFACTURERS OF HEMCO PRODUCTS

<b>BOSTON</b>	<b>CHICAGO</b>	<b>NEW YORK</b>	<b>PHILADELPHIA</b>	<b>SAN FRANCISCO</b>
140 Federal Street	844 West Adams Street	60 East 42nd Street	1333 Chestnut Street	149 New Montgomery Street



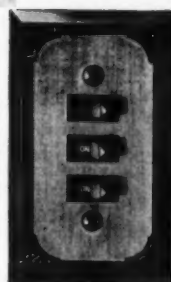
THEY KEEP A-RUNNING

Below: Partial view of REVERSAIR Fan with reversing switch mounted in the side of the shade holder—easily accessible from the floor.



Left: Century 36-inch 3-speed AC Ceiling Fan with lighting fixture. When not arranged for lighting fixture, the reversing switch may be mounted on the top of the fan—and the fan controlled with a 3-speed pull-cord switch.

Reverses fan →  
Starts and stops fan →  
Controls light →



# REVERSAIR CEILING FANS

## Wall or Shade Holder Switch Control

Century 36-inch and 60-inch AC Ceiling Fans can be furnished electrically arranged for reversible operation—controlled by an easily accessible switch in the shade holder or by a wall switch—either of which permits immediate reversal of the direction of blade rotation while the fan is running on any of the three standard speeds.

Their DOWNWARD distribution of air over wide areas at a moderate velocity is especially desirable for extreme temperatures... Their UPWARD distribution of air is especially desirable for moderately high temperatures, since it assures even circulation throughout the entire room and also VITALIZES the air during all seasons of the year.

Century Fans Build Business

**CENTURY ELECTRIC COMPANY**

1806 PINE STREET • • • ST. LOUIS, MO.

46 U. S. and Canadian Fan Stock Points and More Than 50 Outside Thereof

SINGLE PHASE,  
THREE PHASE,  
AND DIRECT  
CURRENT MOTORS

**Century**  
**FANS**

MOTOR GENERATOR SETS, ROTARY  
CONVERTORS, FANS  
AND VENTILATORS

FOR MORE THAN 27 YEARS AT ST. LOUIS

P-8-36

### "Square D" Main Fuses Sealed Without End Walls

Amps.	Poles	Meter			Non-Meter		
		Fused For	Neutral	Test Type	Number	Price	Test Type
30	2	2 Plug	Fused	36211	\$ 3.50	16211	\$ 3.10
30	2	1 "	Solid	36231	3.50	16231	3.10
30	3	2 "	"	36331	3.70	16331	3.25
30	3	2 "	Unfused	36381	3.70	16381	3.75
30	2	2 Enc.	Fused	36251	4.10	16251	3.70
30	2	1 "	Solid	36271	4.30	16271	3.40
30	3	2 "	Unfused	36361	3.80	16361	3.85
30	2	2 "	Solid	36371	4.30	16371	3.55
60	2	2 "	Fused	36252	12.90	16252	11.95
60	2	2 "	Solid	36272	12.00	16272	11.10
60	3	2 "	Unfused	36362	19.00	16362	17.90
60	3	2 "	Solid	36372	13.75	16372	12.85
100	2	2 "	Fused	36253	21.25	16253	20.35
100	2	2 "	Solid	36273	21.25	16273	19.45
100	3	2 "	Unfused	36383	26.50	16383	24.75
100	3	2 "	Solid	36373	23.00	16373	21.25

Enclosed Double Branch Cutout No. 35211-30 Amp. 125 Volts.....	\$2.35
Fused Plug Receptacle..... 5021-30 " 125 "	2.20
" " " " " " 5001-30 " 250 "	5.65
Cabinet Porcelain Fuse Block... 1021-30 " 125 "	1.25

### "Square D" Meter Service Types

Single Type		Ganging Type	
No. 32211 or 32311.....	\$3.70	No. 12211-13211.....	\$4.15
No. 32311.....	4.00	No. 12311.....	4.45
No. 34211.....	4.60	No. 14311.....	5.65
No. 34311.....	5.25		

**"Square D" Without End Walls Live & Dead Fuse Type**

METER TESTING						
Number	Amps.	Pole	Fused	Neutral	Description	Price
55211	30	2	1 Plug	Solid	Single Type Fuse Dead.....	\$ 2.35
58211	30	2	2 "	Fused	" " Live.....	2.95
SK-916	30	2	1 "	Solid	" " " Dead.....	2.95
55311	30	3	2 "	Solid	" " " Dead.....	3.70
57311	30	3	2 "	"	" " " Live.....	3.70
15211	30	2	1 "	"	Gang Type Fuse Dead.....	2.80
18211	30	2	2 "	Fused	" " " Live.....	3.35
39231	30	2	1 "	Solid	Gang Type Acces. M. Fuses	4.40
39331	30	3	2 "	"	Gang Type Acces. M. Fuses	5.20
15311	30	3	2 "	Solid	" " " Dead.....	4.15
17311	30	3	2 "	"	" " " Live.....	4.15
58251	30	2	2 "	Cart. Fused	Extra for End Wall.....	.30
24361	30	2	2 "	"	Cartridge Fuse Live.....	3.30
57391	30	3	2 "	Solid	" " " Dead.....	4.05
28252	60	2	2 "	Fused	" " " Live.....	4.05
27312	60	3	2 "	Solid	" " " Dead.....	8.45
14312	60	3	2 "	"	" " " Live.....	8.90
28253	100	2	2 "	Fused	" " " Dead.....	10.80
27313	100	3	2 "	Solid	" " " Live.....	15.05
27313	100	3	2 "	"	" " " Dead.....	15.95

NON-METER TYPE					Description	Price
Number	Amps.	Pole	Fused	Neutral		
26311	30	3	2 Plug	Solid	Plug Type Fuse Dead.....	\$ 2.58
26351	30	3	2 Cart.	"	Cart. Type Fuse Dead.....	4.05
SK-659	30	3	2 Cart	Switched	Cart. Type Fuse Dead.....	4.60
SK-660	60	3	2 "	"	Cart. Type Fuse Dead.....	11.70
SK-674	100	3	2 "	"	Cart. Type Fuse Dead.....	19.20

**"Square D" Accessible Main Fuse Type**

METER TEST TYPE		Accessible Main Fuse Type		Price
Number	Amp. Pole	Fused		
30391	30 3	3 Cart.	.....	\$10.65
30392	60 3	3 " "	.....	20.35
30393	100 3	3 " "	.....	30.00

Number	Amp.	Pole	Fused	Price
10391	30	3	3 Cart.....	\$10.05
10392	60	3	3 ".....	18.60
10393	100	3	3 ".....	28.25

METER TEST TYPE					Price
Number	Amp.	Pole	Fused		
36351	30	3	3 Cart.	.....	\$11.00
36352	60	3	3 "	.....	17.80
36352	100	3	3 "	.....	26.50

Number	Amp.	Pole	Fused	Price
SK-671	30	3	3 Cart.....	\$ 4.60
SK-672	60	3	3 ".....	11.70
SK-673	100	3	3 ".....	19.20

FITTINGS FOR STANDARDIZED SWITCHES		Price
End Walls for 30 Amp. Switches.....		\$3.00
60 & 100 Amp. Switches.....		80
Trough Closing Plates No. 20533 & 34.....		10
Connecting Trough No. 20733—3½" Long.....		45
20738—8½".....		40
Universal End Wall & Shutters.....		30
Meter Shutter only No. 24358.....		12

SK2158 with Test Block.....	\$7.05	\$9.55
SK2186 without Test Block.....	4.85	7.30
12611 W. P. Meter Sw. Box.....	9.90	

**TYPE C—Square D—Single Throw, Industrial Switches**  
**Quick Break Only**

250 Volts Fusible				575 V. AC with Arc Suppres.				Fused and Unfused	
Amps.	2 Pole	3 Pole	3 Pole	Amps.	Description	3 Pole	3 Pole		
40	\$8252	\$8351	10.00	40	575V. Fused.....	468432	10.95		
60	\$6252	\$830	10.00	60	575V. Not Fused.....	41342	10.95		
60	Solid Neutral	47312	9.10	60	575V. Fused.....	468432	13.65		
100	\$5253	\$12.75	9.50	100	575V. Not Fused.....	41343	17.60		
100	Solid Neutral	468313	14.60	100	575V. Fused.....	468433	21.85		
200	\$4254	\$20.00	14.00	200	575V. Not Fused.....	41344	25.85		
200	Solid Neutral	473314	22.75	200	575V. Fused.....	468434	38.25		

**"Square D", Industrial Quick Make & Break, Single Throw**

230 V. DC. and AC. Fusable			250-600 V. DC. and 575 V. AC. Unfusable		
Amps.	2 Pole	3 Pole	Amps.	2 Pole	3 Pole
x30		#80351 \$13.65	x30	#81252 \$ 9.55	#81351 \$11.40
60	#86252 13.65	#86352 18.25	30-60	#81262 12.75	#81362 15.95
100	#86253 20.90	#86353 27.80	100	#81263 20.95	#81363 24.10
200	#86254 36.40	#86354 49.95	200	#81264 28.20	#81364 34.60
300	#86255 51.90	#86355 69.95	300	#81265 40.60	#81365 49.95
600	#86256 100.00	#86356 136.00	600	#81266 118.00	#81366 127.75

x60 Amp. Sw. with 300 Amp. Spacing (x=250 Volts only.)

**"Square D", Quick Break, Industrial, Single Throw**

250 Volts		Description		Single Throw	
2 Pole				3 Pole	
No. 89251	\$3.20	Quick Make & Break	No. 89351	\$ 5.20	
91251	2.65	Not Quick Break	91351	4.00	
x90251	7.75	Quick Break Only	x90351	10.00	
(x 60 Amp. Switches with 30 Amp. Clips)					

### Cutler-Hammer (T-V) Single Throw Industrial Type

Cutler-Hammer (I-V) Single Throw Industrial Type Series 4131										
250 Volts DC or AC Fusible					575 Volts AC Fusible					
Amps 2 Pole		3 Pole			Amps 3 Pole		4 Pole			
30	4131H3	\$ 3.20	4131H3	\$ 5.20	200	4131H25	\$10.90	4131H34	\$18.20	
60	4131H3		200	4131H4	10.00	60	4131H25	13.65	4131H34	21.00
100	4131H4	12.75	4131H15	15.50	100	4131H26	21.85	4131H36	36.40	
200	4131H5	20.00	4131H16	26.40	200	4131H27	38.25	4131H37	51.90	
400	4131H6	49.15	4131H17	67.35						
125-250 Volt Solid Neut. Fusible					Non-Fusible Type 250 DC 500-600 AC					
Amps 3 Pole		4 Pole			Amps 2 Pole		3 Pole			
30	4131H39	\$ 6.75	4131H44	\$ 8.20	x30	4131H54	\$ 3.20	4131H58	\$ 4.10	
60	4131H40		200	4131H45	11.15	60	4131H55	8.60	4131H59	8.60
100	4131H41	14.60	4131H46	20.50	100	4131H56	10.20	4131H60	13.00	
200	4131H42	22.75	4131H47	31.85	200	4131H57	19.10	4131H61	22.75	
400	4131H43	63.70	4131H48	82.00	x30	Amp 250 Volts Only				

Cutler-Hammer (T-V)

Cutter-number (1-7)					
2 Pole			3 Pole		
Amps	Description	Numbers	Price	Numbers	Price
30	For Plug Fuses.....	4141H1H2	\$ 1.65	4141H3-4	\$ 2.90
30	2 Blades - 2 Fuses.....	4141H5		4141H6	2.25
30	For Cartridge Fuses.....	4141H6H8	1.80	4141H9-10	3.60
30	For Plug Fuses.....	4141H11-12	.75		
30	For 2 Cart. Blades-2 Fuses.....	4141H13		4141H11	3.25
30	Non-Fusible.....	4141H23	2.35	4141H24	4.10
60	For Cartridge Fuses.....	4141H13	6.70	4141H14-15	7.80
60	For 2 Blades & 2 Fuses.....	4141H16		4141H16	7.45
100	For Cartridge Fuses.....	4141H17	10.30	4141H20-21	6.65
100	For 2 Blades & 2 Fuses.....	4141H18		4141H21	11.90

### METER SERVICE SWITCHES

Cutler-Hammer (1-V) without End Walls				
Meter Test Type				Without End Walls
<b>Live Fuse Type</b>				
30	For Plug Fuses.....	4307H1&5	\$ 2.95	4307H8
30	For Cartridge Fuses.....	4307H2&6	3.30	4307H10
60	For Cartridge Fuses.....	4307H3&7	8.45	4307H11
100	For Cartridge Fuses.....	4307H4&8	15.05	4307H12
<b>Dead Fuse Type</b>				
30	For Plug Fuses.....	4309H1	2.40	4309H3
30	For Cartridge Fuses.....	4309H4	2.40	4309H6
60	For Cartridge Fuses.....	4309H7	12.00	4309H9
100	For Cartridge Fuses.....	4309H10&11	21.20	4309H12

### SAFE-LOCK METER SERVICE SWITCHES

Accessible Main Fuses		Cutter-hammer (1-1/2") without End Walls		Without End Walls	
		Test Type		Test Type	
30	For Plug Fuses.....	4325H1&2	\$ 4.40	4325H3	4.40
30	For Cartridge Fuses.....	4325H4&5	4.80	4325H6	4.80
60	For Cartridge Fuses.....	4325H7&8	15.05	4325H9	15.05
100	For Cartridge Fuses.....	4325H10&11	23.85	4325H12	25.60
Non-Test Type					
30	For Plug Fuses.....	4327H1&2	3.65	4327H3	4.00
30	For Cartridge Fuses.....	4327H4&5	4.00	4327H6	4.00
60	For Cartridge Fuses.....	4327H7&8	14.15	4327H9	15.00
100	For Cartridge Fuses.....	4327H10&11	23.00	4327H12	24.00

### Meter Service and Entrance Switches

Description		30 A	60 A	100 A	200 A
Sealed Fuses-Meter Test 3 Phase 3 Wire...		\$11.35	\$17.60	\$22.30	\$57.20
Accessories		13.85	30.40	60.15	99.60
		11.45	21.15	30.80	66.00
		15.60	37.00	53.70	98.60
		10.85	19.35	29.05	48.40
		11.45	21.15	30.80	56.30

Cutler-Hammer (T-V)

Cutler-Hammer (1-V)		
No.	Without End Walls	Price
4311H1	All 30 Amp. Standardized Meter Service Switches	\$3.70
4311H2	Branch Circuit Type.	4.00
4311H3		4.60

For Detailed Description See Cutler Hammer (Taumhull Vandalook) Co.

**SHUTTERS END WALLS**  
Cutler Hammer (T.V.) 60 & 100

Cutler-Hammer (T-V)		30 Amp.	Amp.
Single Piece End Wall used with Cabinet.....	\$ .35		\$ .80
Shutters for Shutter Type End Wall.....	.15		.30
Conduit End Wall.....	.35		.80
Universal End Wall.....	.35		

### TYPE "A" SWITCHES

#### Single Throw—Series 4111

Simple Throw—Series #111									
Fusible 250 Volt DC or AC					Fusible 575 Volt AC				
Amps.	2 Pole		3 Pole		Amps	2 Pole		3 Pole	
30	4111H1	\$10.90	4111H20	\$13.65	30	4111H11	\$16.40	4111H30	\$20.00
60	4111H2	13.65	4111H21	18.20	60	4111H12	17.30	4111H31	20.90
100	4111H3	20.95	4111H22	27.30	100	4111H13	27.30	4111H32	31.80
200	4111H4	36.40	4111H23	41.00	200	4111H14	42.80	4111H33	52.80
400	4111H5	68.25	4111H24	91.00	400	4111H15	100.00	4111H34	109.20

## Switches

## Switches

## TYPE "A" SWITCHES

## Single Throw—Series 4111

Non-Fusible 250DC or 500-600 AC		Amps. 2 Pole		Amps. 3 Pole	
30-60	4111H75 13.55	4111H84 11.40	200	4111H728 20	4111H87434.60
60-100	4111H75 13.55	4111H85 15.95	400	4111H78 81.90	4111H88 91.00
100	4111H76 20.95	4111H86 24.10	x250 V. only.		

## MOTOR STARTING SWITCHES

## Manual Operated Single Pole Push Button with Overload Protection

Type of Switch	Type of Relay	Number	D.C. 115 V.	A.C. Current 110 V.	Cycles 25-60	Price
Open.....	Fast Trip	9101H1	H. P.	H. P.	H. P.	\$2.85
Enclosed....	"	9101H2	"	"	"	3.70
Open.....	Slow	9101H54	"	"	"	2.85
Enclosed....	"	9101H55	"	"	"	3.70

Series	Description	Amps	Volts	2 Pole	3 Pole	4 Pole
4151H1	Light Duty Motor Sw. 1/4 HP or Less.	30	115	\$ 1.65		
9115H1	Motor Switch with Thermal Cutout.	30	To 550		\$13.90	\$19.80
4231H	For infrequent Duty.	30	220	6.50	8.85	9.75
4246H	For infrequent Duty 5 HP.	30	220	12.55	13.20	16.65
4246H	For infrequent Duty 7 1/2 HP.	30	440		19.65	23.65
4246H	For infrequent Duty 7 1/2 HP.	60	220	17.30	19.65	26.85

## SMALL ENTRANCE SWITCHES

## Trumbull Electric Closed or Open Ends

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
5790 EW Porc. Base.....	30	125	For 1 Plug Fuse.....	\$1.65	
5791-2-3-4 & 5993.....	30	125	" Plug Fuses.....	1.85	\$3.45
5991-5993 Porc. Base.....	30	125-250	"	1.85	2.40
13640-13641 Kappa.....	30	250	No Fuse-Slate Base.....	2.75	4.10
13642-43 & 13743 Kappa.....	30	250	For Enclosed Fuses.....	2.75	4.35
13321-13321 Quick Break.....	30	250	"	3.55	5.20

## STANDARDIZED MAIN ENTRANCE SWITCHES

## Trumbull Electric Single Phase or DC Solid End Plate

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
16361 to 16368.....	30	125-250	For Plug Fuses.....	\$3.30	\$4.10
16371 " 16378.....	30	"	Enclosed Fuses.....	3.65	4.40
16381 " 16388.....	60	250	"	9.25	9.70
16391 " 16398.....	100	250	"	15.85	16.75

## STANDARDIZED METER SERVICE SWITCHES

## Trumbull Electric For Meter Testing Open End Without End Walls

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
16300 to 16300.....	30	125-250	For Plug Fuses.....	\$ 2.95	\$ 3.75
16315 " 16324.....	30	"	Enclosed Fuses.....	3.35	4.10
16330 " 16338.....	60	"	"	8.45	8.90
16341 " 16348.....	100	"	"	15.05	15.95

## ACCESSIBLE FUSE METER SWITCHES

## Trumbull Electric With Test Blades With and Without End Walls

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
18111.....	30	125	For 1 Plug Fuse.....	\$ 3.55	
18121-18131.....	30	125	" Plug Fuses.....	4.05	\$4.55
18121.....	30	125-250	" Enclosed Fuse.....	3.95	
18121-18121.....	30	"	Enclosed Fuses.....	4.90	4.90
18122-222-322.....	60	"	"	15.50	16.75
18123-223-323.....	100	"	"	24.65	26.40

## Without Test Blades

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
19111.....	30	125	For 1 Plug Fuse.....	\$ 3.35	
19121-19131.....	30	125-250	" Plug Fuses.....	3.70	\$4.05
19121.....	30	"	" Enclosed Fuse.....	3.95	
19121-19121.....	30	"	Enclosed Fuses.....	4.65	4.65
19122-222-322.....	60	"	"	14.50	15.85
19123-223-323.....	100	"	"	23.35	24.65

†No End Walls. ‡With End Walls.

## SEALED FUSE METER SWITCHES

## Trumbull Electric With Test Blades With and Without End Walls

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
15827.....	30	125	For 1 Plug Fuse.....	\$ 2.40	
28111-28121-28131.....	30	125	" Plug Fuses.....	3.55	\$ 3.75
28121.....	30	125	" Enclosed Fuse.....	3.85	
28121-28121.....	30	125-250	Enclosed Fuses.....	4.10	4.35
28122-28122-28122.....	60	"	"	13.25	14.50
28123-223-323.....	100	"	"	22.00	23.75

Without Test Blades

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
29111.....	30	125	For 1 Plug Fuse.....	\$ 3.10	
29121-29131.....	30	125-250	" Plug Fuses.....	3.10	\$ 3.30
29121.....	30	"	" Enclosed Fuse.....	3.45	
29121-29121.....	30	"	Enclosed Fuses.....	3.75	3.90
29122-222-322.....	60	250	" Enclosed Fuses.....	12.35	13.65
29123-223-323.....	100	250	" Enclosed Fuses.....	20.70	22.00

†No End Walls. ‡With End Walls.

## UNIVERSAL METER SERVICE SWITCHES

## Trumbull Electric Without End Walls

Numbers	Amps.	Volts	Fusing	2 Pole	3 Pole
971-123.....	30	125	For 1 Plug Fuse.....	\$3.75	
972-123.....	30	125	For 1 Plug Fuse.....	4.70	
973-333.....	30	125	For 2 Plug " Solid Neu.....	\$4.10	
975-333.....	30	125	For 3 Combinations.....	5.30	5.30
979-333.....	30	125	For 4 Combinations.....	5.30	5.30

## POLYPHASE ENTRANCE &amp; METER SWITCHES

## Trumbull Electric

Series No.	Style	30 Amp.	40 Amp.	60 Amp.
16379	Entrance—"DO-ALL"	\$ 4.70		
15321-15623	Acc. Fuse—Test Conn.	11.60	\$15.60	\$21.10
17321-17623	Acc. Fuse without Test Conn.	10.95	12.80	19.40
26321-26623	Sealed Fuse with Test Conn.	11.50	14.40	17.60
				33.50
				100 Amp.
15321-15623	Acc. Fuse—Test Conn.		\$30.80	\$47.50
17321-17623	Acc. Fuse without Test Conn.		29.05	33.45
26321-26623	Sealed Fuse with Test Conn.		27.30	44.00

## ENTRANCE RANGE AND LIGHTING SWITCH

18422-2W Switch with 1-60 A., 250 V. & 2-30 A. 125 V. Branches.....\$23.00  
18422-4W Switch with 1-60 A., 250 V. & 4-30 A. 125 V. Branches.....23.80

## END WALLS, SHUTTERS, TROUGHS, ETC.

## Trumbull Electric

	30 A.	60 A.	100 A.
End Wall One Piece for Standardized Switches.....	\$ .30	\$ .80	\$ .80
End Wall One Piece for Polyphase Switches.....	.30	.80	.80
Shutters for End Walls for Standardized Switches.....	.15	.30	.30
Shutters for End Walls for Polyphase Switches.....	.15		
Troughs 2-3" & 4".....	\$ .40	\$ .45	\$ .50
			\$ .55

## TYPE "A" INDUSTRIAL SWITCHES

## Trumbull Single Throw, Quick Make &amp; Break

Amp	2 Pole AC-DC	3 Pole AC Only	2 Pole AC-DC
30.....	72221 \$10.95	72321 \$13.65	36221 \$ 9.60
60.....	72222 13.65	72322 18.20	36222 11.85
100.....	72223 20.95	72323 27.30	36223 20.00
200.....	72224 36.40	72324 41.00	36224 25.50

## Trumbull "SNUF-ARC" TYPE

Fusible	2P. 230-575	3P. 230-575	No Fuse	2P. 575V	3P. 230-575
Amp	AC & DC	AC Only	AC & DC	AC Only	AC Only
30.....	72261 \$16.40	72361 \$20.00	36261 \$12.75	* 36321 \$11.40	
60.....	72262 17.30	72362 21.00	36262 13.65	36362 15.95	
100.....	72263 27.30	72363 31.85	36263 20.95	36363 24.10	
200.....	72264 43.25	72364 52.80	36264 28.20	36364 34.60	

\*230 V. AC, no "Snuf Arc"

## TYPE "C" SWITCHES

## Trumbull Single Throw, Quick Make &amp; Break

Amp	2 Pole AC-DC	3 Pole AC Only	2 Pole AC-DC	3 Pole AC
30.....	40221 \$ 5.50	40321 \$ 6.86	20221 \$ 5.00	20321 \$ 6.40
60.....	40222 8.20	40322 10.00	20222 8.20	20322 8.65
100.....	40223 12.75	40323 15.50	20223 10.95	20323 12.30
200.....	40224 20.00	40324 26.40	20224 19.10	20324 22.75

Fusible	2P.	230	3 Pole	230	3 Pole	Blades	4 Pole	Blades
Amp	230	AC-DC	3 Pole	VAC	43322	\$ 9.55	43422	\$11.85
60.....	44222	\$ 8.65	44322	\$10.50	43323	\$ 9.55	43423	\$11.85
100.....	44223	13.20	44323	15.95	43324	15.00	43424	20.95
200.....	44224	20.50	44324	26.85	43325	23.20	43425	32.30

## WESTINGHOUSE

## All 30 Amp. Porcelain Base

	2 Pole	3 Pole
"Midget"—S. N.—1 Blade—1 Fuse—#62612 & 62613	\$1.75	
"Type 00" Fusible—125-250 V.—Plug Fuses. 60909	1.80	#60961 \$3.00
"S. N. 3 Blades.....	60901 1.75	62328 2.70
"S. N. 3 Blades.....		60962 3.00
"Not Fusible—2 Blades—250 Volt. 60909	2.55	62352 2.70
"Fusible Cart. Fuses—250 V. 60909	2.45	62365 4.00
"Fusible Cart. Fuses—250 V. 60909		62363 4.30
"S. N. 250 V.....		62351 3.20
"S. N. 3 Blades.....		62364 4.30
"Type WK-45" Fusible Cart. Fuses—3		
Blades—250 V.....		545101 5.20
"Type WK-45" S. N. Fusible Cart. Fuses—		
2 & 3 Blades—250 V.....	545301	5.20 545341 5.20
"Type WK-45" Non-Fusible—2 and 3 Pole		
—3 Blades.....	545001	4.20 545001 4.20

## TYPE C METER ENTRANCE

## Westinghouse "WK-62" Quick Break

60 Amp.—230 Volts.....	62304	\$ 9.15	62305	\$10.90	62307	\$13.60
100 "—230 ".....	62308	13.60	62309	17.25	62311	29.05
200 "—230 ".....	62312	21.80	62313	29.05	62315	47.20

## SOLID NEUTRAL FUSIBLE

		2 Blades—2 Fuses		3 Blades—2 Fuses	
60 Amp.—3 Poles.....	#62332	\$ 9.15	#62306	\$10.90	
100 "—3 ".....	62330	14.55	62310	17.25	
200 "—3 ".....	62331	22.70	62314	29.05	

## UNIVERSAL METER SERVICE SEALED MAIN FUSES

## Westinghouse "WK-57" Meter Testing

One & Two Circuit	40 Amp.	60 Amp.	Four Circuit
57924	\$3.70	All 30 Amp.	57925 \$5.00
57926	4.05	125 Volt For	57499 4.60
57928-31	3.60	Plug Fuses	57928 3.60
57498	5.25		57500 5.25

## STANDARDIZED METER SWITCHES

## Westinghouse "WK-54" Without End Walls

Amps.	Fused For	Dead Fuse Type	2 Pole	Price	3 Pole	Price	Live Fuse Type	2 Pole	Price	3 Pole	Price
30	Plug	61140	\$ 2.40		60224	\$ 2.95	59442	\$ 3.70			
30	"	61143	3.50	61142	\$ 3.75	59441	2.95	60225	3.70		
30	Enclosed	61639	3.80			54371	3.30	60227	4.05		
30	"	61145	4.10	61144	4.30			59448	4.05		
60	"	61150	12.80	61151	13.65	59461	8.40	60229	8.85		
100	"	61152	21.10	61153	22.80	59463	14.95	60232	15.90		

## METER SERVICE AND ENTRANCE SWITCHES

## ACCESSIBLE FUSE TYPE

## Westinghouse "WK-65"

Amps.	Fused For	With Test Facilities	2 Pole	Price	3 Pole	Price	Without Test Facilities	2 Pole	Price	3 Pole	Price
30	Plug	65000	\$ 3.50		65010	\$ 3.30	65011	3.30	65012	\$ 4.00	
30	"	65001	4.00	65002	4.35	65011	3.65	65012	4.00		
30	Enclosed	65055	3.90			65063	3.90				
30	"	65003	4.85	65004	4.85	65013	4.60	65014	4.60		
60	"	65005	14.95	65006	15.85	65015	14.10	65016	14.95		
100	"	65007	23.70	65008	25.45	65017	22.80	65018	23.70		



# PL-24

## Switches

### POLYPHASE METER SWITCHES Westinghouse "WK-54"—Sealed Main Fuses

Amps.	Fused For	3 Pole	230 Volt AC—Less End Wall	Price
30	#60266—3	230	"	\$11.00
60	#60267—3	230	"	16.70
100	#60268—3	230	"	26.30

### Westinghouse "WK-65"—Accessible Fuses

Amps.	Fused For	3 Pole	230 Volt AC—Less End Wall	Price
30	#60100—3	230	"	\$11.00
60	#60101—3	230	"	16.70
100	#60102—3	230	"	26.30

### METER TRIMS—END WALLS—TROUGHS For Meter Switches

One Piece Meter Trims	30 Amp.	60 & 100 Amp.
Blank End Wall or Shutter Type End Wall	\$0.35	\$0.80
Shutter Type Meter Trim or Adapter Trim	.15	.30
New Universal Trim with Slide	.35	.35
Replacement Plate or Adapting Plate	.15	.15
Wiring Trough 2-3 & 4" long	.40c—5" .45c—6" .50c—7" .55c—8" .60c.	
Fuse Receptacle #R57252	Less Fuses	\$1.25

### "TYPE A" INDUSTRIAL SWITCHES

#### Westinghouse "WK-66"—Quick Make & Break

Amps.	2 Pole	3 Pole	4 Pole	5 Pole	6 Pole	7 Pole	8 Pole
30	#66100 \$10.90	#66101 \$12.70	#66020 \$16.35	#66021 \$19.95			
60	#66103 13.60	#66104 18.15	#66023 17.25	#66024 20.90			
100	#66106 20.90	#66107 27.25	#66026 27.25	#66027 31.75			
200	#66109 36.30	#66110 40.85	#66029 42.65	#66030 52.65			

### "TYPE C" INDUSTRIAL SWITCHES

#### Westinghouse "WK-97"—Quick Make & Break

Amps.	2 Pole	3 Pole	4 Pole	5 Pole	6 Pole	7 Pole	8 Pole
30	#597100 \$ 5.45	#597101 \$ 6.80	#597151 \$10.90	#62152 \$18.15			
60	#597103 8.15	#597104 10.90	#597154 13.60	#597155 19.95			
100	#597106 12.70	#597107 15.45	#597157 21.80	#597158 36.30			
200	#597109 19.95	#597110 26.30	#597160 38.10	#62161 51.75			

### ENTRANCE SWITCHES

#### Noark Closed Ends

Number	Amp.	Volt	Fuses	Blades	Neutral	2 Pole	3 Pole
8283.....	30	125	1 Plug	1	Solid	\$1.75	
8283.....	30	125	1	2	Fused	1.80	
8283.....	30	125-250	2	2	Solid	\$2.50	
8683.....	30	250	2N.E.C.	2	Fused	1.80	
8683.....	30	125-250	2	2	Solid	3.20	
8136.....	60	125-250	2	2	Fused	7.25	
8226.....	60	250	2	2	Fused	6.65	
8131.....	100	125-250	2	2	Solid	11.90	
8221.....	100	250	2	2	Fused	10.25	

### METER SERVICE SWITCHES

#### Noark Sealed Service SECO Without End Walls

Sealed Service	Number	Amp.	Volt	Fuses	Blades	Neutral	2 Pole	3 Pole
9993.....	30	125	1 Plug	1	Solid	\$2.40		
9543.....	30	125	1	1	Fused	3.50		
9543-9523.....	30	125-250	2	2	Solid	3.50	\$3.75	
9563.....	30	125-250	2N.E.C.	2	Fused	4.10		
9533.....	30	125-250	2	2	Solid	4.30		
9573.....	30	125	1	1	"	3.80		
66576.....	60	230	1	1	"	11.90		
66566.....	60	250	2	2	None	12.80		
66536.....	60	125-250	2	2	Solid	13.65		
66561-66571	100	250	1or2*	1 or 2	None	21.00		
66531.....	100	125-250	2	2	"	22.85		

#### Noark Meter Service & Entrance ACCO Without End Walls

Amps.	Fused For	2 Pole	3 Pole	4 Pole	5 Pole	6 Pole	7 Pole	8 Pole
30A	Plug	#9343 \$ 3.55	#9323 \$ 4.50	#8343 \$ 3.30	#8323 \$ 4.00			
30A	Enc.	#9363 4.85	#9333 4.85	#8363 4.60	#8333 4.60			
60A	"	#6366 14.95	#6336 15.80	#7366 14.10	#7336 14.95			
100A	"	#6361 23.70	#6331 25.45	#7361 22.85	#7331 23.70			

### ACCO Entrance Range & Lighting Switch

No. 66336RLA.. Range and Lighting Sw. 1-60A. 250V. and 4-30A. 125V. Branches.....	\$23.80
No. 66336RLB.. Range and Lighting Sw. 1-60A. 250V. and 6-30A. 125V. Branches.....	26.25
No. 30..... Meter Back Plate and Switch Support for above.....	2.00

### UNIVERSAL Meter Service Switches—No End Walls

Number	Blades	Fuses	Circuits	Fuses	2 Pole	3 Pole
971123.....	1	1	2	2	1	\$3.75
9723-972123.....	1	1	4	4	1	5.00
973333.....	1 or 2	1 or 2	1 or 2	2	1 or 2	4.05
9753-9793.....	1 or 2	1 or 2	2 or 4	4	1 or 2	5.65
975333-979333.....	1 or 2	1 or 2	2 or 4	4	1 or 2	5.25

### Noark Doall Without End Plate

Amps.	Fused For	2 Pole	Price	3 Pole	Price
30A	Plug	#913123-911123	\$ 2.95	#912333-914333	\$ 3.75
30A	Enclosed	#921223	3.30	#922333-924333	4.05
60A	"	#921226	8.40	#925336	8.90
100A	"	#921221	14.95	#925331	15.85

### "TYPE C" "NUBLADE"—Quick Break

#### 230 Volts Fusible

Amp.	2 Pole	Price	3 Pole	Price	4 Pole	Price
30	#8223	\$ 2.70	#8233	\$ 4.30	#8243	\$ 8.65
60	#8226	8.15	#8236	10.00	#8246	12.70
100	#8221	12.70	#8231	15.40	#8241	26.30
200	#8222	19.95	#8232	26.30	#8242	43.55
400	#8224	49.00	#8234	67.15	#8244	86.65

#### 230 Volts Solid Neutral

		3 Pole		4 Pole	
Amp.		Number	Price	Number	Price
30	All Solid Switching Neutral	8933	\$ 5.20	8943	\$10.00
60		8936	10.00	8946	14.50
100		8931	15.40	8941	28.15
200		8932	26.30	8942	45.40
400		8934	67.15	8944	90.75

#### Non-Fusible

Amp.	2 Pole	Price	3 Pole	Price	4 Pole	Price
30	#8723	\$ 2.75	#8733	\$ 4.10	#8743	\$ 8.15
60	#8726	8.15	#8736	8.65	#8746	13.60
100	#8721	10.80	#8731	12.25	#8741	20.90
200	#8722	19.05	#8732	22.70	#8742	38.10
400	#8724	36.30	#8734	47.20	#8744	63.55

### Quick Break "TYPE C" "NUBLADE" 575 V.-AC

Amp.	3 Pole	Price	4 Pole	Price	3 Pole	Price	4 Pole	Price
30	#8433	\$10.90	#8443	\$18.15	#8633	\$ 8.15	#8643	\$10.90
60	#8436	13.60	#8446	19.95	#8636	10.90	#8646	18.15
100	#8431	21.80	#8441	36.30	#8631	17.25	#8641	27.25
200	#8432	38.10	#8442	51.75	#8632	29.00	#8642	42.65

### ACCESSORIES FOR NOARK SWITCHES

Single Piece End Wall for 30 Amp. Switches.....	\$3.30
Shutter for "30".....	15
Universal End Wall No. 900103.....	40
Blanking Side No. 908103-908203.....	15
Trough—3-4 & 5" .40—6" .45—7".....	50
Cabinet Fuse Block No. 902413.....	1.25

### POLYPHASE

#### Meter Service and Entrance Switches

125-250 Volts	Without End Walls	Meter Service
Main Entrance	"ACCO" QUAD "ACCO" QUAD "SECO" QUAD	BREAK BREAK BREAK
"DOALL"—3 WIRE Accessible Fuses	Accessible Fuses	Sealed Fuses
Amp. Number	Price	Number Price
30	#51233 \$ 4.65	#77033 \$10.40
60	#51236 11.60	#77036 18.45
100	#51231 19.05	#77031 27.20

### SOLID NEUTRAL SWITCHES

#### Noark Fusible—Quick Break

Amps.	Volts	3 Pole-2 Poles	4 Pole-3 Poles	5 Pole-4 Poles
30	125-250	#8133 \$ 3.20	#8143 \$ 8.15	#8153 \$12.70
60	"	#8136 9.10	#8146 11.35	#8156 19.95
100	"	#8131 14.50	#8141 20.45	#8151 35.85
200	"	#8132 22.70	#8142 31.75	#8152 50.82
400	"	#8134 63.55	#8144 81.70	#8154 111.00

### BULLDOG SWITCHES

#### Toggle Type—Quick Make & Break

Cat. Number	Volt	Poles	Blades	Fuses	Neutral	30 Amp. Switches	Price
92211 & T-82211	125	2	1	1 Plug			\$11.80
90211	125	2	2	2			4.55
90311	115	3	3	3			8.20
92211	125-250	3	2	2	Solid		5.00
91311	125-250	3	3	2	"		7.25
92221	250	2	1	1 Cart.			1.80
90221	250	2	2	2			5.45
90321	230	3	3	3			8.20
91321	250	3	3	2	Solid		7.75
90351	575 A. C.	3	3	3			12.75
81321-81321U	230-460	3	3	3			9.15

### "TYPE C" NON-INTERLOCKING

#### Quick Make & Break

Single Throw	Fusible	Type "C"
Amps.	250 Volts DC—230 Volts AC	575 Volts AC
30 A. Porc. Base. 50221S	\$ 3.20	50321S \$ 5.15
30 A. End Plates. 50221P	3.20	50321P 5.15
60 A. " " 50222	8.20	50322 10.00
100 A. " " 50223	12.70	50323 15.40
200 A. " " 50224	20.00	50324 26.30
400 A. " " 50225	49.00	50325 67.15

## Switches

PL-25

## Switches

## TYPE "C" NON-INTERLOCKING—Continued

Single Throw		Not Fusible		Type "C"	
		3 Pole 2 Blades	4 Pole 3 Blades	5 Pole 4 Blades	
		2 Fuse Holders	3 Fuse Holders	4 Fuse Holders	
		230 V.-AC & DC	115-230 V.-AC	115-230 V.-AC	
x 30 Amp. Type C	52311P	\$ 2.50			
30	52321P	3.20	52421	52521	\$ 12.75
60	52322	9.10	52422	52522	20.00
100	52323	14.60	52423	52523	36.00
200	52324	22.75	52424	52524	51.00
400	52325	63.75	52425	52525	122.00

x This Switch for 125 Volts Ed. Plug Fusible.

		2 Pole	3 Pole	4 Pole	
30 A. 2 Pole—250 Volt.	53221S	\$ 3.20	53321S	\$ 4.00	53421S \$ 5.90
30 A. DC and 230 Volts.	53222	8.15	53322	8.65	53422 13.60
100 A. AC 3 & 4 Pole.	53223	10.90	53323	12.25	53423 20.90
200 A. 230 Volts.	53224	19.00	53324	22.70	53424 38.10
400 A. AC Only.	53225	36.30	53325	47.20	53425 63.50

## 30 AMP. SERVICE ENTRANCE SWITCHES

## Bulldog—Not Meter Test

Cat. Number	Volt	Poles	Description	Price
100211S & P	125	2	Fusible — For Plug Fuses	\$1.65
104211S	125	2	— Quick Make & Break	2.75
100221S & P	250	2	— For Cartridge Fuses	2.50
103211S & P	250	2	Not " "	2.75
100311SP & 101311P	115	3	A.C. Plug Fuses	3.00
104311S	115	3	A.C. " " Quick Make & Break	4.35

MAIN SERVICE  
Meter Test Switches

Combining a Meter Test Switch with Range and Lighting Circuits				
Number	Amp.	Volt	Poles	Price
721204	60	125-250	3	Solid 1-60A & 4-30A \$24.10
721206	60	125-250	3	1-60A & 6-30A 28.50
431101	Meter Mounting Plate and Cabinet Support			1.10
412112	End Plate			.30

## "TYPE A"

## Bulldog Single Throw Quick Make and Break

		2 Pole	3 Pole	4 Pole	
		No.	No.	No.	Price
250 V. DC & 230 V. AC Fusible					
30 Amp.	10221	\$10.90	10321	\$13.60	10421 \$15.35
60 Amp.	10222	13.60	10322	15.15	10422 21.80
100	10223	20.90	10323	27.25	10423 36.30
200	10224	36.30	10324	40.85	10424 54.45
400	10225	68.10	10325	82.50	10425 107.25
575 Volts—AC Fusible					
30 Amp.	10261	\$16.35	10351	\$19.25	10451 \$24.50
60	10262	17.25	10352	20.90	10452 26.30
100	10263	27.25	10353	31.75	10453 41.75
200	10264	42.65	10354	52.65	10454 63.50
400	10265	90.75	10355	99.00	10455 128.00
Not Fusible					
30 Amp. 230 Volts only	13221	\$11.80	13321	\$11.35	13421 \$16.35
30-60 Amp.	13223	19.95	13353	24.05	13453 31.75
100	13224	25.40	13354	34.50	13454 46.30
200	13225	54.45	13355	82.50	13455 107.25
Not Fusible					
30-60 Amp.	13262	\$12.70			
100	13263	20.40			
200	13264	27.65			
400	13265	66.25			

## COMPENSATOR SWITCHES

## Bulldog Quick Make &amp; Break Fusible

		230 Volt AC	4 Pole	
		No.	No.	Price
30 A.	30321	\$16.35	30421	\$ 21.80
60 A.	30322	17.45	30422	26.30
100 A.	30323	25.15	30423	47.20
200 A.	30324	47.90	30424	65.85
400 A.	30325	76.25	30425	118.80
		575 Volts AC Arc Chokers		
		No.		Price
30 A.	30351	\$18.35		
60 A.	30352	19.25		
100 A.	30353	29.95		
200 A.	30354	30.85		
400 A.	30355	81.70		

## MOTOR STARTERS

## Bulldog

		3 Pole	4 Pole	
		No.	No.	Price
30 Amp.—Type A—230 Volts AC	40321	\$16.35	40421	\$22.70
60	40322	22.70	40422	31.75
30	40341	22.70	40441	31.75
60	40342	32.70		

NOTE: For Bulldog Switches not listed deduct 10% from Bulldog Lists.

## SMALL ENTRANCE SWITCHES

## Columbia, 30 Amp.

		2 Pole	
		No.	Price
Single Fused Single Blade—125 Volt-Plug Fused	320-321	\$1.50	
Double " Double " 125 " " "	1090	1.25	
" " " " 250 " " "	3930	1.60	
" " " " 250 " Cartridge Fused	322	2.85	
" " " " 250 " " "	422	2.50	
		3 Pole	
		No.	Price
Single Fused Single Blade—125 Volt-Plug Fused	1931-2	\$2.15	
Double " Double " 125 " " "	3931-2	2.45	
" " " " 250 " " "	323	4.00	
" " " " 250 " Cartridge Fused	423	4.40	

## ENTRANCE SWITCHES

Range and Lighting		Columbia	3 Pole 125-250 Volt
Cat. No.	Amp.	Branches	Price
3551	60	1-30A-1-60A. 250V. N. E. C. Fused & 2-30A. Plug Fused	\$34.60
3552	60	1-30A-1-60A. 250 V. " " " 4-30A. " "	35.40
3553	60	1-30A-1-60A. 250 V. " " " 6-30A. " "	38.60

## BRANCH CIRCUIT ENTRANCE SWITCHES

## Columbia

30 Amp. Series	2 Pole Circuit	2 Pole	3 Pole Circuit	2 Pole	3 Pole	3 Pole
2401 to 2406	\$3.90	\$4.90	\$5.20	\$5.85	\$6.20	\$7.15
3401 to 3406	4.90	6.20	6.50	7.15	8.45	9.50
3501 to 3506	4.75	5.85	6.20	6.90	7.50	8.45

Series 30—Quick Break—250 Volts for Meter Trims  
For Cartridge Fuses

	30 Amp.	60 Amp.	100 Amp.	200 Amp.
2 Pole.....	3022 \$5.55	3025 \$ 8.75	3028 \$12.50	3031 \$18.20
3 Pole.....	3023 7.50	3026 10.00	3029 16.15	3032 24.05

## INDUSTRIAL SWITCHES

## Columbia

Series 70 Type C Fusible						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
250 Volts Fusible Quick Make & Break	30A	C7001		\$ 9.30	C7002	\$11.30
	60A	C7004		12.00	C7005	15.50
	100A	C7007		18.85	C7008	23.65
	200A	C7010		27.95	C7011	34.65
Series 70 Type A Fusible						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
250 Volts Fusible Quick Make & Break	30A	A7001		10.30	A7002	\$12.85
	60A	A7004		13.10	A7005	17.30
	100A	A7007		21.45	A7008	27.50
	200A	A7010		30.50	A7011	28.35
Series 71-500 Volts Fusible						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
500 Volts Quick Make & Break	30A	7101		\$13.60	7102	\$15.50
	60A	7104		14.00	7105	16.00
	100A	7107		23.50	7108	26.65
	200A	7110		37.70	7111	42.25
Series 73-500 Volts Unfused						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
500 Volts Quick Make & Break	30A	7301		\$10.80	7302	\$12.70
	60A	7304		10.80	7305	13.25
	100A	7307		17.15	7308	19.20
	200A	7310		23.65	7311	28.45
Series 72-600 Volts Fusible						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
600 Volts Quick Make & Break	30A	7201		\$14.60	7202	\$16.05
	60A	7204		14.60	7205	16.00
	100A	7207		24.10	7208	27.15
	200A	7210		38.60	7211	42.50
Series 74-600 Volts Unfused						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
600 Volts Quick Make & Break	30A	7401		\$11.70	7402	\$14.35
	60A	7404		12.45	7405	14.95
	100A	7407		18.90	7408	21.45
	200A	7410		25.15	7411	29.25
Series 20-250 Volts Fusible						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
Quick Break Only 250 Volts	30A	2022		\$ 5.10	2023	\$ 6.55
	60A	2025		6.85	2026	7.90
	100A	2028		10.85	2029	13.35
	200A	2031		19.10	2032	23.85
Series 22-250-500 Volts Unfused						
		2 Pole		3 Pole		
		Amps	Number	Price	Number	Price
Quick Break Only 250 Volts	30A	2222		\$ 4.75	2223	\$ 6.25
	60A	2225		8.95	2226	9.55
	100A	2228		11.35	2229	12.55
	200A	2231		19.10	2232	23.40

## MOTOR STARTING SWITCHES

## Columbia, 250 Volts

		2 Pole	3 Pole	
		No.	No.	Price
30 Amp. Motor Start Switch	6001	\$12.50	6002	\$16.70
60	6004	13.10	6005	17.25
30 Amp. Motor Start Switch	6008		6009	\$19.65
60	6006		6007	26.80

## Wadsworth Switches

## MAIN ENTRANCE SWITCHES

Single Phase and D. C.		Amps.	Volts	Poles	Blades	Fuses	Accessible Fuses	Price
		Number						
1450-1250	30	125	2	1	1 Plug	Neutral		\$ 3.55
1402-1202	30	125	2	2	2	"		3.90
1403-1203	30	125-250	3	2	2	"	None	4.25
2250	30	125	2	1	1 NEC	"		4.15
2202	30	250	2	2	2	"	None	4.85
2203	30	125-250	3	2	2	"	Solid	4.85
1800	60	125	2	1	1	"		13.90
1802	60	125 or 250	2	2	2	"	None	14.75
1803	60	125-250	3	2	2	"	Solid	15.65
1900	100	125	2	1	1	"		22.60
1902	100	125 or 250	2	2	2	"	None	23.45
1903	100	125-250	3	2	2	"	Solid	24.35
4803	200	125-250	3	2	2	"		44.50
4803	400	125-250	3	2	2	"		95.00



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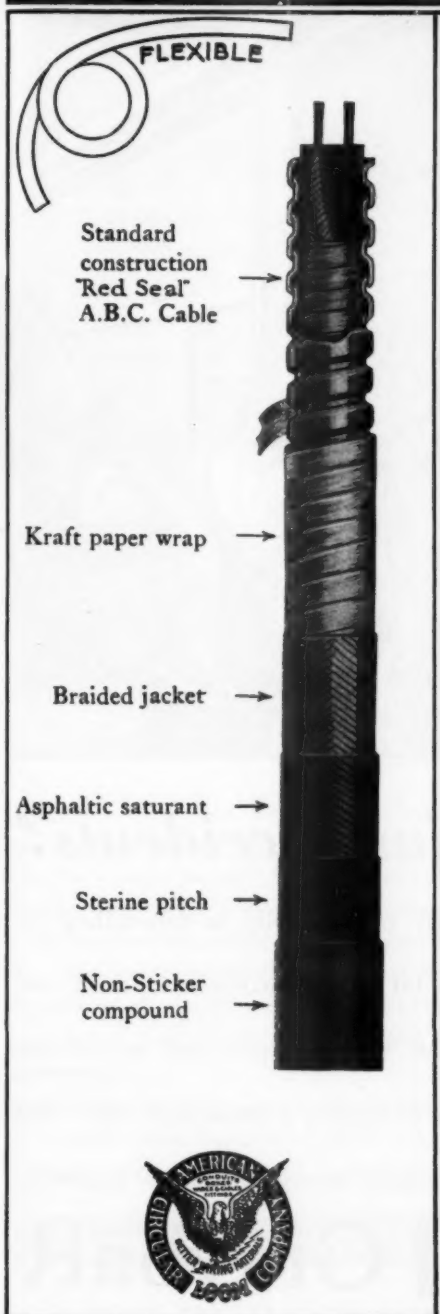
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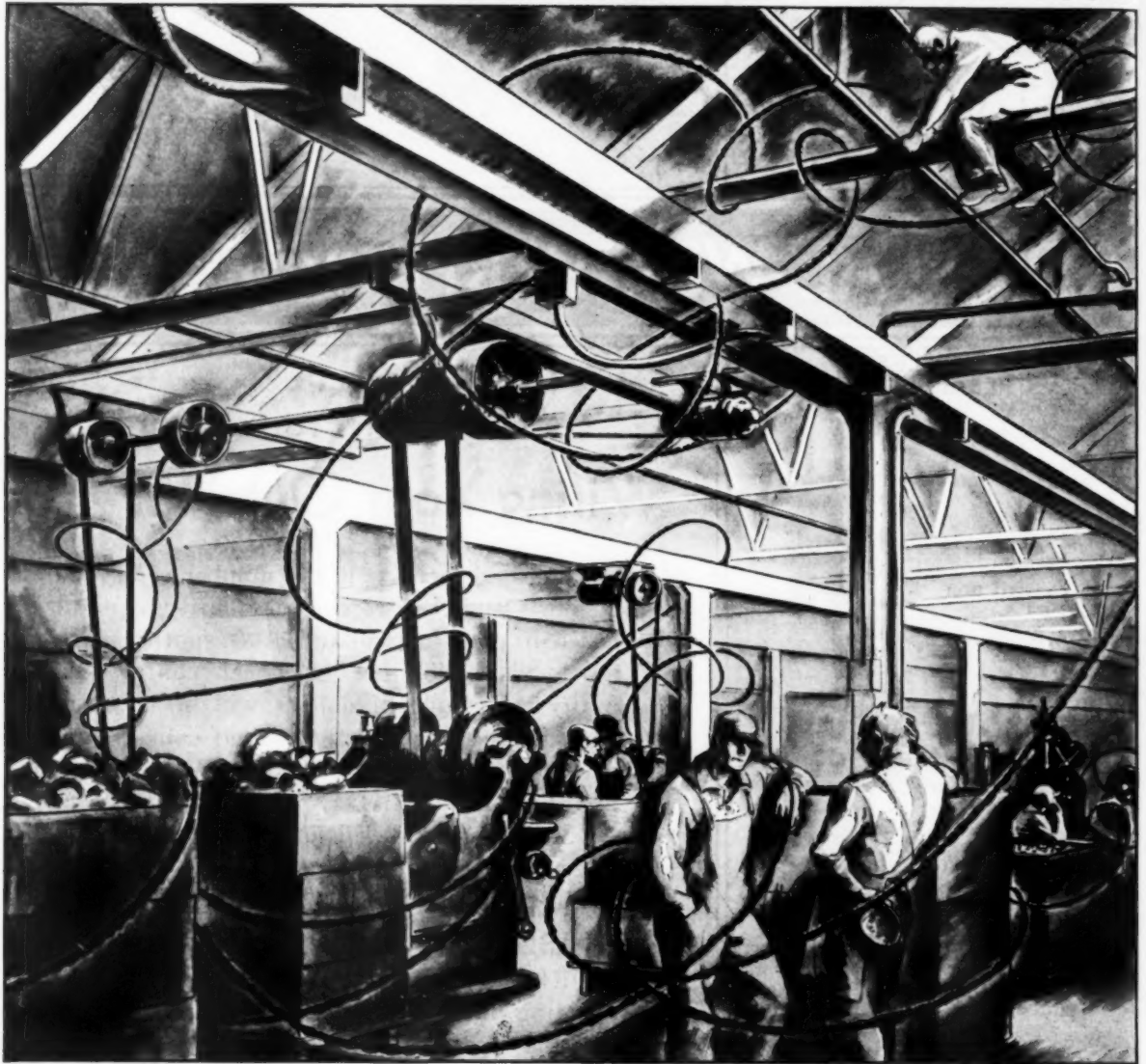
"RED SEAL" WEATHERPROOF ARMORED CABLE is provided with a moisture resisting flexible covering, which checks all corrosive actions of the weather. Flexible, easy to handle and neat. A. C. L. also manufactures WEATHERPROOF FLEXIBLE CONDUIT.

Try "RED SEAL" WEATHERPROOF ARMORED CABLE or FLEXIBLE CONDUIT on your next outdoor job. They will prove profitable.

Sold by leading jobbers, as are other A.C.L. PRODUCTS: Xduct and Electroduct, standard rigid conduit; "Red Seal" ABC Armored Bushed Cable, "Red Seal" Metallic Flexible Conduit, Loomflex, non-metallic flexible conduit, Loomflex Cable, non-metallic sheathed, and a complete line of Boxes and Fittings.

**American Circular Loom Company, Inc.**  
233 Broadway New York City, New York

Tune in on the Graybar Program, at 10 P. M. Eastern Daylight Saving Time every Tuesday . . . . Columbia Broadcasting System



## Are wiring tie-ups . . . *just accidents?*

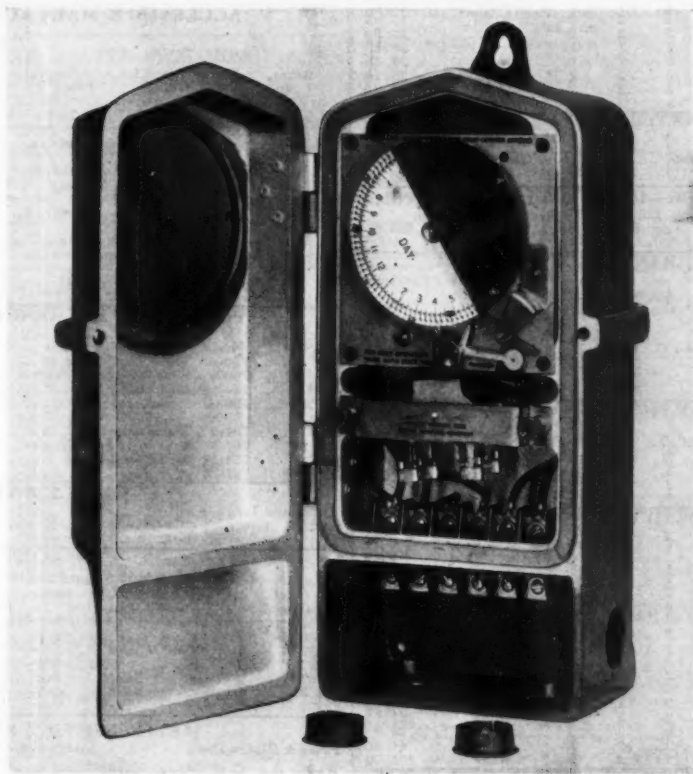
Wise electrical contractors recognize more and more their responsibility in forestalling expensive tie-ups—tie-ups that may be due to a single defective bit of wire or conduit. Such contractors choose only quality materials . . . Of course, dependable wiring supplies and second-rate supplies often *look* much alike. But there's one sure indicator of quality in these materials—the name and reputation of the supplier. Graybar's reputation for quality started back at the beginning of the electrical industry.



# GraybaR

OFFICES IN 76 PRINCIPAL CITIES. EXECUTIVE OFFICES: GRAYBAR BUILDING, NEW YORK, N. Y.

# SANGAMO TIME-SWITCHES



ACCURATE TIME....ELECTRIC WINDING  
MODERATE COST....LOW UPKEEP

The Sangamo Time-Switch is the product of combined facilities of two American manufacturers—each a leader in its field—Sangamo, makers of Meters, and Hamilton, manufacturer of the “Watch of Railroad Accuracy.”

The Sangamo Time-Switch embodies these features:

**1...** Accurate dependable time...insured by the standard Sangamo clock-movement with Hamilton 11-jewel Escape-ment having a micrometer adjustment, and fully protected by dust-cap.

**2...** Electric Winding...The switch mechanism is operated by a clock-mainspring, kept wound by a Sangamo motor which is continually in circuit. Because of ample reserve

power, the switch is unaffected by current interruptions.

**3...** Mercury tube contacts of latest design, shown by tests to be absolutely dependable in service.

**4...** Independent of frequency or voltage variations.

**5...** Made for either a. c. or d. c. operation.

**6...** Low maintenance cost...simple, sturdy design assures trouble-free operation. All parts interchangeable.

For medium-priced installations as well as costly ones, wherever a sturdy and thoroughly dependable time-switch is required...specify Sangamo. Available with meter terminal base or conduit-connected base.

Write for descriptive folder giving complete details.

SANGAMO ELECTRIC COMPANY • SPRINGFIELD, ILLINOIS







### VESTIBULE TYPE

No. 74 Armored Cord Receiver Type.....	\$25.00
No. 74A Swing Arm Receiver Type.....	37.30
No. 74C Cordless Loud Speaker Type.....	30.75
Above prices are for telephones complete but do not include for any call buttons.	
Add for buttons—Janitor Calling Buttons if fitted.....	\$ .95
Add for Each Suite Calling Button.....	.95

### SUITE TELEPHONES

Series 2809 to 2849 or 1909 to 49	Page 22 Bulletin No. 89 S. H. Couch Co.			
Number of Buttons.....	0	1	2	3
Price Ea. Surface or Flush	\$11.40	\$11.40	\$12.45	\$13.60
				\$14.60

## TELEPHONE CABLES

TELEPHONE CABLES				Lead Covered Type "L"			
Number of Connectors	Braided Type "B"	Price	per Foot	Number	Price	per Foot	
8	B-8	\$ .14		L-8	\$ .18		
12	B-12	.16½		L-12	.21		
16	B-16	.18		L-16	.27		
21	B-21	.22		L-21	.29		
25	B-25	.24		L-25	.31		
31	B-31	.27		L-31	.39		
37	B-37	.30		L-37	.44		

## EDWARDS TELEPHONES

### Vestibule Type

No. 321 and 397 Armored Cord Receiver Type.....	\$25.00
No. 322 and 396 Cordless Loud Speaker .....	30.75
Above prices are for telephones complete but do not include any call buttons.	
Add for each Call Button.....	\$0.95
" " Mail Box.....	3.25

### Apartment Telephones

No. 3322 and 3352 Surface Wall Type Watch Case Receiver .....	\$12.50
No. 3332 and 3362 " " " Long Hand " .....	16.75
No. 3342 and 3372 Flush " " " Watch Case " .....	12.50
Above prices are for telephones complete with two push buttons—Add \$1.10 for 3 Buttons.	

## TIME SWITCHES

## ACE TIME SWITCHES—SELF WOUND

Sgl. or Dble. Pole—100 to 130 Volts—Up to 60 Cycle  
On and Off Types No. 35 \$45.00 No. E4 \$47.50 No. E6 \$50.00  
All Dble. Pole—20 Amp.—125 Volts Each Circuit  
Two Circuit Types A2, B2, C2, E2, G2.....\$45.00

## GENERAL ELECTRIC TIME SWITCHES

GENERAL ELECTRIC TIME SWITCHES			
TYPE T-8C—Sgle. Pole			
15 Amp. Indoor Service			
Type	Cat No.	115 V.	230 V.
		Price	Price
T-8C1.....	34:979 to 984.....	\$22.00	\$22.00
T-8C3.....	34:985 to 990.....	23.00	24.00
T-8C4.....	34:991 to 996.....	22.00	23.00
TYPE T-9—Dble. Pole			
20 Amp. In or Outdoor Service			
60 and 50 Cycle..	10:637-40.....	40.00	41.00
40 and 25 " " "	10:641-44.....	40.00	41.00
Extra for Cutouts.		4.00	4.00

## HARTFORD TIME SWITCHES

		10	20	35	50
		Amp.	Amp.	Amp.	Amp.
Type	B Double Pole.....	\$38.00	\$39.00	\$42.00	\$50.00
	C & D Double Pole.....	39.00	42.00	47.00	52.00
"	G Apt. Hall Light Control D. P.....	38.00	.....	60.00	.....

## HOROLECTRIC TIME SWITCHES

Type	Wound Capacity	Description	Price
E H	Elec. 60 Amp. Hand 60 "	Double Pole.....	\$32.00 24.00
EW HW	Elec. 60 " Hand 60 "	Same as Type E & H on a Mounting Plate in Weatherproof Box.....	42.00 34.00
EO HO	Elec. 60 " Hand 60 "	With Automatic Cutout for omitting operation on Sunday or any days desired.....	38.00
EW HOW	Elec. 60 " Hand 60 "		30.00 40.00
ET HT	Elec. 60 " Hand 60 "	Equipped for Four Operations per day, Two "Ons" and Two "Offs" in 24 hours.....	35.00
ETW HTW	Elec. 60 " Hand 60 "		27.00 45.00
ETW HTW	Elec. 60 " Hand 60 "		37.00
ETO HTO	Elec. 60 " Hand 60 "	With automatic day cutout and four operations per day.....	42.00 34.00
EM HM	Elec. 30 " Hand 30 "	Single Pole, Double Throw, for operating large open circuit switches.....	38.00
EMW HMW	Elec. 30 " Hand 30 "		30.00 48.00
EMW HMW	Elec. 30 " Hand 30 "		40.00
EC HC	Elec. 30 " Hand 30 "	Single Pole, with special contact for connecting automatic electric time motor.....	35.00
ECW HCW	Elec. 30 " Hand 30 "		27.00 45.00
ECW HCW	Elec. 30 " Hand 30 "		37.00

E—Electrically Wound

M—Single Pole, Double Throw

O—With Automatic Day Cutout

W—In Weatherproof Box

H—Hand Wound

T—For Four Operations per day

## RELIANCE & RACINE SWITCHES

	10 Amp.	20 Amp.	30 Amp.	50 Amp.
Racine Type 1R-2R.....	\$19.50	\$23.00	.....	.....
Reliance Type 10-20-30-50.....	28.00	30.00	\$32.00	\$36.00
Reliance Type 15 Triple Pole.....	.....	32.00	.....	.....
Apartment House Types A-B-C-D-E-F-G.....	30.00	30.00	.....	.....

## SANGAMO TIME SWITCHES

		115V. AC		230V. AC		115V. DC		230V. DC		
Type	No. Poles	Thaw	Amp. Price	Amp. Price	Amp. Price	Amp. Price	Amp. Price	Amp. Price		
TC or TM-11	Sgle.		\$50.00	15	\$50.00	20	\$56.00	15	\$50.00	
TC - TM-12	Sgle.	20	52.00	15	53.00	20	59.00	15	62.00	
TC - TM-21	Dbly.		\$66.00	15	63.00	20	69.00	15	62.00	
TC - TM-22 *	Sgle.	20/5	50.00	15/5	50.00	20/5	65.00	15/5	68.00	
TM-31	Triple	Sgle.	5	62.00	5	62.00	5	68.00	5	71.00
TM-32	* Dbly.	5	65.00	5	65.00	5	71.00	5	74.00	

## TORK TIME SWITCHES OR CLOCKS

Description		Indoor	Outdoor	Switchboard
Single Pole	15 Amp. 125 Volt	#115H \$20.00	#215H \$27.50	#015H \$17.50
Double	" 30 " 250 "	#130H 25.00	#230H 32.50	#030H 22.50
Single	" Double Throw	#166H 25.00	#266H 32.50	#066H 22.50

**Contactor and Clock Combination**

#76062H- 60 Amp. 2 Pole AC.	\$50.00	#75062H- 60 Amp. 2 Pole DC.	\$ 70.00
#76102H-100 " " " AC.	75.00	#75102H-100 " " " DC.	125.00

## ZENITH TIME SWITCHES

### 8 Day Automatic Time Switch

Max. Amp.	Max. Vols.	Poles	Operation	Closed Face Cat.	Open Face Cat.	Price	Price
10	220	Dble.	On-Off	1101	1151	\$20.00	\$22.00
20	220	"	"	1102	1152	23.00	25.00
20	220	Triple	"	1103	1153	28.00	30.00
30	220	Dble.	"	1103	1153	25.00	27.00
50	220	"	"	1105	1155	32.00	34.00
20	110	Sgle. Cir. 1 on-2	on-both off	110A	115A	26.00	28.00
20	110	" Both on-1 off 2	"	110B	115B	28.00	30.00
x20	220	Dble. " -1 -2	"	110B2	115B2	30.00	32.00
20	110	Sgle. Cir. 1 on-2 on-1 off-2	"	110C	115C	28.00	30.00
20	110	" -1 -2 -2 -1	"	110G	115G	28.00	30.00
x20	220	Dble. " -1 -2 -2 -1	"	110G2	115G2	30.00	32.00
10	220	Sgle. Momentary Contact	"	110MC	115MC	25.00	27.00

xThis new type switch permits balancing of load and doubles capacity of

## TRANSFORMERS

## BELL & TOY TRANSFORMERS

Name	Style	Watt	Secondary Volts	50 to 133 Cycle		25 to 40 Cycle	
				No.	Price	No.	Price
ED- WARDS	Steel Clad Bell	25	Single	86	\$ 1.25	86	\$ 1.45
	Porcelain Bell	25	Single	86T	1.55	86T	1.75
	Out. Box Bell	25	Three	87	1.55	87	1.75
	Heavy Duty	50	8-16-24	86ER	1.55	86ER	1.75
	" "	75	"	88	4.25	88	4.40
	" "	100	"	89	6.40	89	7.00
	" "	100	"	90	7.40	90	8.15
	Toy	50	3 to 18	870	3.50	870	4.20
G. E.	Bell Residence	12	12 Volt	2332	1.00	102340	1.45
	Box Type	12	"	2488	1.40	2490	1.75
	Heavy Duty	50	8-16-24	2333	4.85	2339	7.00
	" "	100	10-20-30	2334	6.95	2340	11.20
JEF- FERSON	Wizard	25	10 Volt	230-101	1.00	230-102	1.15
	Necode	25	10 Volt	230-111	1.40	230-112	1.65
	Tri-Volt	25	6 to 18V.	230-121	1.40	230-122	1.65
	Porcelain	50	5-14-13	230-131	1.40		
	Little Jeff Toy	50	5-14-13	535-101	3.65	535-102	4.40
	Midwest Toy	75	5-14-22	535-121	4.45	535-122	5.50
	Model 2 Toy	100	5-14-23	535-131	6.75	535-132	8.40
	Model 3 Toy	150	1-30	535-141	8.65		
KIL- LARK	Heavy Duty A	50	6 to 20	231-101	5.10	231-102	7.25
	" " B	75	6 to 20	231-111	7.70	231-112	10.30
	" " G	100	6 to 24	231-171	8.90	231-172	10.00
	" " E	250	8 to 24	231-141	21.00	231-142	26.40
	"Box Bell" in Box	10	8 Volt	9166	2.30		
RICH- ARDS	Blue Bell	20	6 to 16	6163	1.00		
	Tri-Volt	20	6 to 16	6163	1.40		
	Box Type	10	8 Volt	7166	1.40		
	Porcelain Case	10	8 Volt	4166	1.40		
	"Black Bell"—H. D.	50	6-14-20 V.	816- 50	5.00		
STAN- DARD	" " "	75	6-14-20 V.	916- 75	7.50		
	" " "	100	6-12-18-24	916-100	8.90		
	"Box Bell" in Box	10	8 Volt	9166	2.30		
	Porcelain Clad	25	Single	200D1	1.65	201G1	2.10
PATTER- SON	Steel	25	9-15	200D1	1.20	204G1	2.50
	" " B	15	Single	200S1	1.25	206SG	1.40
	Heavy Duty Porc.	50	6-12-18	207S	1.45	208SG	1.75
	" " " "	100	8-16-24	200HD1	0.45	210HE1	7.20
	Steel Clad "A"	50	6-12-18	212EH1	7.75	213HE1	10.30
	" " " "	100	6-12-18-24	302B	9.25	303B	10.75
	" " " "	200	6-12-18-24	304C	17.50	305C	20.65
	" " " "	300	6-12-18-24	306E	21.45	307E	25.75
STAN- LEY	" " " "	500	6-12-18-24	308F	28.90	309F	36.00
	TB HV Duty	50	8-16-24	501	4.25	502	4.75
PATTER- SON	TB HV Duty	75	8-16-24	751	6.40	752	7.00
	TB HV Duty	100	8-16-24	1001	7.40	1002	8.15
PATTER- SON	TB HV Duty	150	8-16-24	1501	9.10	1502	10.00

NOTE: For 220 Volt Transformers add 20% to above prices.



## WIRES

## NEW CODE RUBBER COVERED WIRES

Special Price on No. 14 S.B. Wire

In less than Coil Lots	Per Foot
In Coil Lots	\$.01
Other Sizes	
Fixture Wire Light	No. 18 .01 No. 16 .01 No. 14 .01
" Heavy	.01 .01 .01
Solid Single Braid	.01 .01 See Above
" Double	.01 .01 .01
Stranded Sgls. Braid	.01 .01 .01
" Dble.	.02 .02 .02
Duplex Single Braid	.03 .03 .03
" Double	.04 .04 .04
Other Sizes	
Fixture Wire Light	No. 12 .01 No. 10 .02 No. 8 .03 No. 6 .04
" Heavy	.02 .02 .03 .04
Solid Single Braid	.01 .02 .03 .04
" Double	.02 .02 .03 .05
Stranded Sgls. Braid	.02 .02 .03 .05
" Dble.	.02 .02 .04 .06
Duplex Single Braid	.04 .05 .07 .09
" Double	.05 .06 .08 .10

## LARGER SIZES DOUBLE BRAID STRANDED

Size	Price Per Foot	Size	Price Per Foot
No. 8 D. B.	\$.04	No. 0	\$0.19
No. 6 D. B.	.06	No. 00	.21
No. 4 D. B.	.08	No. 000	.23
No. 2 D. B.	.10	No. 0000	.29
No. 1 D. B.	.12	250,000	.35
No. 0 D. B.	.15		

## CIRCULAR MILL CABLE

Size	Price Per Foot	Size	Price Per Foot
300,000 C. M.	\$0.40	700,000 C. M.	\$0.88
350,000 C. M.	.46	750,000 C. M.	.94
400,000 C. M.	.51	800,000 C. M.	1.00
450,000 C. M.	.57	900,000 C. M.	1.10
500,000 C. M.	.63	1,000,000 C. M.	1.25
600,000 C. M.	.77		

Additions to Code Wire for 25% (Intermediate Grade) and 30% Wire.

Sizes	For Intermediate or 25% Wire	For 30% Wire
From No. 14 to No. 10	8%	20%
From No. 8 to 4	6%	10%
From 3 to 4/0	4%	7%
From 250,000 to 1,000,000 CM.	2%	5%

## WEATHERPROOF WIRE

## Triple Braid

	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Per Pound Solid	\$.60	\$.55	\$.46	\$.44	\$.41	\$.39	\$.35
" Stranded	.01	.01	.02	.02	.03	.04	.07
Per Foot Solid	.01	.01	.02	.02	.03	.04	.07
" Stranded	.01	.01	.02	.02	.03	.04	.07
Number Feet Per Pound	70	80	90	100	110	125	150

EXTRAS—For slow burning W. P. Wire—Per Pound Extra. .01  
For Twisted Pair W. P. Wire—Per Pound Extra. .02  
For Double Braid W. P. Wire—Per Pound Extra. .01  
For Medium Hard Drawn—Per Pound Extra. .004

For Armored Cables See Page PL-9.

## ANNUNCIATOR—TELEPHONE WIRE, ETC.

	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Per Pound Solid	\$.60	\$.55	\$.46	\$.44	\$.41	\$.39	\$.35
" Stranded	.01	.01	.02	.02	.03	.04	.07
Per Foot Solid	.01	.01	.02	.02	.03	.04	.07
" Stranded	.01	.01	.02	.02	.03	.04	.07
Number Feet Per Pound	70	80	90	100	110	125	150

EXTRAS—For slow burning W. P. Wire—Per Pound Extra. .01  
For Twisted Pair W. P. Wire—Per Pound Extra. .02  
For Double Braid W. P. Wire—Per Pound Extra. .01  
For Medium Hard Drawn—Per Pound Extra. .004

For Armored Cables See Page PL-9.

Description	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Single	\$.70	\$.60	\$.56	.01	.01	.01	.01
Twisted or Duplex	.65	.04	.01	.01	.01	.01	.01
Per Foot	.01	.01	.01	.01	.01	.01	.01

Approximate feet per pound Single Cond. Annunciator Wire 158 104 68

Description	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Single	\$.70	\$.60	\$.56	.01	.01	.01	.01
Twisted or Duplex	.65	.04	.01	.01	.01	.01	.01
Per Foot	.01	.01	.01	.01	.01	.01	.01

Office & Damp Proof Wire

Description	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Single	\$.70	\$.60	\$.56	.01	.01	.01	.01
Twisted or Duplex	.65	.04	.01	.01	.01	.01	.01
Per Foot	.01	.01	.01	.01	.01	.01	.01

Asbestos Range Wire

Description	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Single	\$.70	\$.60	\$.56	.01	.01	.01	.01
Twisted or Duplex	.65	.04	.01	.01	.01	.01	.01
Per Foot	.01	.01	.01	.01	.01	.01	.01

Asbestos Range Wire or Switch Board

Description	No. 18	No. 16	No. 14	No. 12	No. 10	No. 8	No. 6
Single	\$.70	\$.60	\$.56	.01	.01	.01	.01
Twisted or Duplex	.65	.04	.01	.01	.01	.01	.01
Per Foot	.01	.01	.01	.01	.01	.01	.01

Asbestos Range Wire

## TELEPHONE WIRES

Covered Inside & Outside	Size	Ins.	Description	Price Per Ft.
19	3/32"	Inside 2 Cond	Twisted Pr.	\$.03
19	3/32"	" 3	"	.04
22	5/64"	" 2	"	.04
18	7/64"	Outside 2	"	.03
18	4/32"	" 2	"	.03
14	5/32"	" 2	"	.05
14	5/32"	" 2	"	.05

For price of single conductor use one-half of 2 Cond. price.

## GALVANIZED TELEPHONE WIRE

Size	BWG	No. 4	No. 6	No. 8	No. 10	No. 12	No. 14
EBB Extra Best	Per Pound	\$.12	\$.12	\$.12	\$.12	\$.13	\$.14
B. B. Best Best	"	.11	.11	.11	.11	.12	.13
Steel	"	.10	.10	.10	.10	.11	.12
Weight Per 1000 Feet		153	112	74	49	32	19
Weight Per Mile		811	590	390	258	170	90

## WIRE, MAGNET

Size	Single Cotton	Double Cotton	Single Silk	Double Silk	Plain Enamel	Enamel Single Cotton	Enamel Double Cotton
8	\$.61	\$.63			\$.61	\$.65	\$.68
10	.62	.65			.62	.67	.71
12	.64	.67			.64	.69	.74
14	.66	.70			.66	.71	.76
16	.67	.73	\$.93	1.09	.67	.72	.78
18	.72	.80	1.00	1.20	.68	.77	.85
20	.79	.91	1.07	1.32	.70	.80	.95
22	.86	1.00	1.15	1.35	.72	.81	1.04
24	.94	1.13	1.27	1.55	.75	1.02	1.23
26	1.04	1.29	1.46	1.81	.80	1.17	1.44
28	1.19	1.64	1.74	2.16	.81	1.37	1.74
30	1.49	1.79	1.92	2.94	.86	1.71	1.96
32	1.68	2.32	2.43	4.15	.92	1.90	2.56
34	2.12	3.06	3.53	5.90	1.04	2.44	3.35
36	2.84	4.03	4.92	8.43	1.16	3.17	4.75
38	5.01	7.55	6.67	11.51	1.42	5.55	...
40					1.74	...	...

NOTE: For odd sizes use half the increase of next larger size.  
For 1/4 lb. lots use one third of above prices.  
For one ounce lots use one tenth of above prices.

## Price Per 100 Feet

Size	Single Cotton	Double Cotton	Single Silk	Double Silk	Plain Enamel	Enamel Single Cotton	Enamel Double Cotton
8	\$3.60	\$4.00			\$3.35	\$4.00	\$4.20
10	2.40	2.40			2.00	2.40	2.45
12	1.50	1.60			1.36	1.60	1.60
14	1.30	1.35			1.28	1.55	1.57
16	.75	.80	\$0.90	\$1.00	.72	.75	.85
18	.50	.55	.58	.65	.40	.42	.45
20	.36	.40	.40	.52	.32	.40	.42
22	.26	.32	.35	.36	.24	.32	.36
24	.20	.25	.25	.30	.16	.24	.30
26	.12	.14	.16	.20	.11	.14	.16
28	.09	.12	.12	.16	.09	.12	.15
30	.09	.10	.10	.12	.09	.10	.12
32	.09	.10	.10	.11	.09	.10	.11
34	.09	.10	.10	.11	.09	.10	.11
36	.09	.10	.10	.11	.09	.10	.11
38	.09	.10	.10	.11	.09	.10	.11
40					.09	.10	.11

NOTE: Prices per 100 feet are higher than per pound rate to cover cost of measuring and should be used only for small lot sales.

## LEAD &amp; RUBBER COVERED WIRE AND CABLE

Size	Single Conductor Solid	Double Conductor Solid	Three (3) Conductor Solid
No. 14	Price Per Foot \$0.04	\$0.05	\$0.07
No. 12	" " .05	.06	.10
No. 10	" " .07	.08	.12
No. 8	" " .09	.10	.15
No. 6	" " .12	.14	.19
No. 4	" " .17	.20	.26
No. 3	" " .22	.25	.34
No. 2	" " .27	.30	.37
No. 1	" " .34	.38	.44
No. 1/0	" " .38	.44	.51
No. 3/0	" " .44	.51	.60
No. 4/0	" " .51	.60	.70
250,000 C. M. Cable		.62	.70
300,000 C. M. "		.70	.85
350,000 C. M. "		.85	1.00
400,000 C. M. "		1.00	1.20
500,000 C. M. "		1.30	1.45
600,000 C. M. "		1.45	1.60
700,000 C. M. Cable		1.57	1.75
750,000 C. M. "		1.75	1.90
800,000 C. M. "		1.90	
900,000 C. M. "			
1,000,000 C. M. "			

NOTE: Above prices are based on following quantities:  
No. 14 to No. 8 Less than 100 ft. No. 6 and larger less than 50 ft.

## PARKWAY CABLES

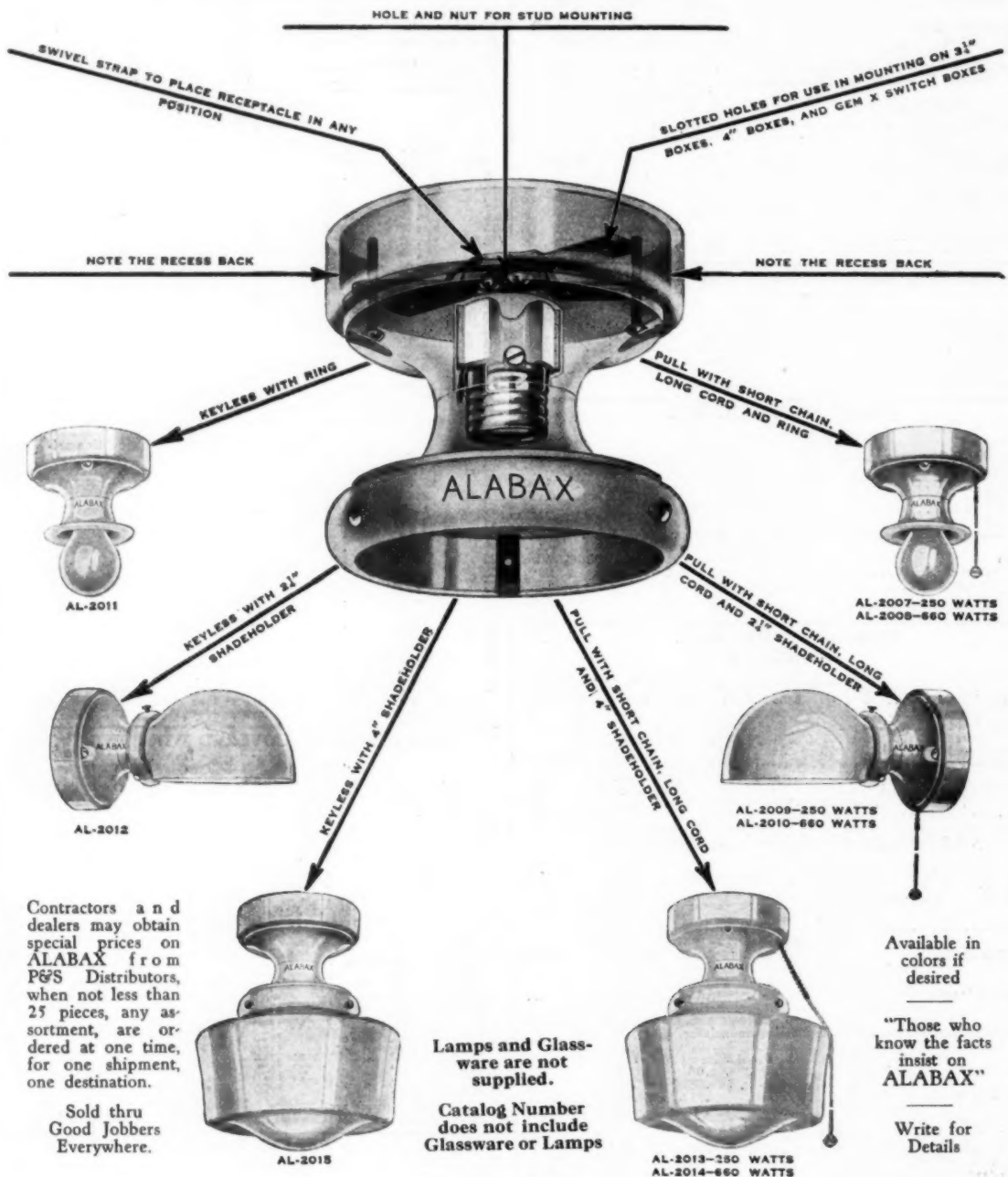
Size	Steel Taped 2 Cond.	3 Cond.	Non-Metallic 2 Cond.	3 Cond.
No. 14 per ft.	\$ .35	\$ .45	\$ .18	\$ .23
No. 12 " "	.37	.50	.20	.26
No. 10 " "	.43	.65	.22	.30
No. 8 " "	.47	.72	.26	.38
No. 6 " "	.55	.71	.37	.57
No. 4 " "	.65	1.05	.50	.72
No. 2 " "	.78	1.25	.66	.93
No. 1 " "	1.00	1.50	.80	1.25
No. 0 " "	1.20	1.60	.93	1.47

NOTE: Prices on Parkway Cables are based on Trade costs in quantities of less than 100 Feet. Larger quantities take lower prices. Consult your jobber.

# P & S ALABAX

## PORCELAIN LIGHTING FIXTURES

FOR  
CEILING OR SIDEWALL



Manufactured by  
**PASS & SEYMOUR, INC.**  
DIVISION C  
SOLVAY STATION SYRACUSE, N. Y.



**WIRES NEW "CRACKER-JACK" PLANT IN CHICAGO:** F. J. Steeve and John J. Chapp, operating under the name of Crescent Engineering Co., Chicago, just completed the wiring work in the new plant of the makers of "Cracker-Jack." Industrial wiring is their specialty.

*(Continued from page 40)*

anti-trust laws, but it does voice its indignation at being confronted with ruinous competition on the one hand, or jail sentences on the other. The Trade Practice Conference rules, while not very potent, point the way out of the dilemma.

H. H. Broach, president of the I. B. E. W., declared for stabilization of employment. Mr. Broach saw that as the big problem and pointed out that it emphasized the interdependence of the employer and labor.

Otto S. Beyer, author of the B & O Plan for stabilization of employment told how the railroads went about putting this plan into effect.

The meeting closed with a luncheon meeting at which time the committee reports were read as follows: Finance, J. G. Livingston; treasurer, A. C. Brueckman; membership, A. J. Hixon; research director, J. A. Kelly; ways and means, G. M. Sanborn; by-laws, John W. Hooley.

Just before Willis W. Clark presented the report of the nominating committee, President L. J. Comstock read a beautifully prepared address on the aims of the Guild, parts of which have previously been quoted and more of which will appear in a later issue.

#### Massachusetts Group Elects Officers

The Electrical Contractors Association of Malden, Melrose, Medford and Everett, Mass. recently elected officers for the year 1931-32. They are R. H. Erb, Everett Electric Co., president; Henry Wischhusen,

## You can do the job better with AMERICAN FLOODLIGHTS



**SIMPLE  
SURE  
SUPERIOR**

**ONE** Job will get you another if you install **AMERICAN FLOODLIGHTS**. In operation they tell their own story of perfect floodlighting efficiency. There is no glare nor are there any dark spots. . . . A complete and intense light reaches every spot to be lighted.

American Floodlights are equipped with a special adjustable socket which will take either 500, 750, 1000 or 1500 Watt bulbs and is so designed that the focal point is always in the center, thereby insuring the issue of uniform light at all times.

A perfect system of ventilation preserves the interior finish by eliminating any chance of cracking or peeling.

Made of fine aluminum and galvanealed metal, American Floodlights cannot rust.

Whether the area to be lighted is large or small, American Floodlights will do the job better. Successful American installations include Football Fields, Baseball Fields, Race Tracks, Tennis Courts, Miniature Golf Courses, Amusement Parks, Beaches and Pools.

Write for dealers' discount.

*where you can use American*



**A typical football field equipped with American Floodlights.**



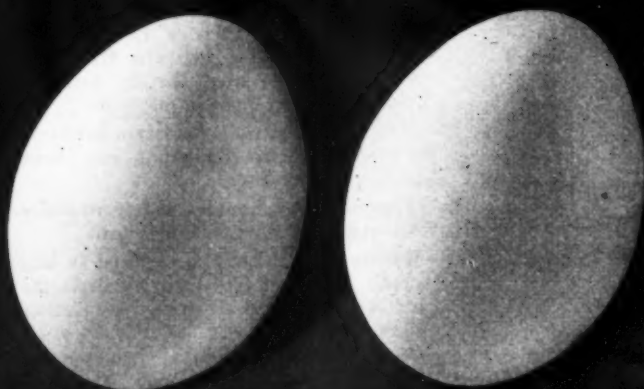
**Tennis courts equipped with American Floodlights.**

Write for Complete Catalog

**AMERICAN PLAYGROUND DEVICE  
Anderson Co. Indiana**



# These Eggs Look Alike, But—



... which is the fresh egg?  
Examination alone will tell!

It is the same with Friction Tape, one roll may look like another. You have to examine and test by use to learn its value. We invite you to test the "extra service" quality of DUTCH BRAND Friction Tape. Send for a test roll by pinning this ad to your letterhead. Learn for yourself why this outstanding product (four times impregnated) will stick tightly, last longer and handle cleaner without waste of tape or safety. You will like it—and its low cost for high quality will surprise you.

Make extra profits by selling as well as using DUTCH BRAND Friction Tape. Comes in 4 sizes, Nos. 1, 2, 4 and 8, packed in counter display cartons.

**VAN CLEEF BROS.**

Established 1910

Manufacturers Friction and Rubber Tape  
Woodlawn Avenue, 77th to 78th Streets, Chicago, U. S. A.

## DUTCH BRAND FRICTION TAPE

Fuses instantly without heat. Molds into one solid piece, replacing the original insulation. Resists over 22,000 volts.



A scientific mixture. Cleans as it works. Holds solder fast. Less paste required per job.



Henry Wischhusen & Co., vice-president; T. D. Schoonmaker, lighting engineer, Malden Electric Co., secretary and R. P. Everett, power engineer, Malden Electric Co., treasurer.

This association was formed in 1919 and has been actively functioning ever since. The group meets every month and has now turned its attention to refixturing campaigns and the promotion of a minimum standard of house wiring.

### Ohio Contractors To Convene

The Ohio Electrical Contractors' Association will hold its convention at the Commodore Perry Hotel, Toledo, Ohio, on Friday and Saturday, June 19 and 20.

The convention committee consisting of H. T. Uhl, Akron, general chairman; E. DeLisle, Toledo, vice-chairman; Max Romanoff, Toledo, P. I. Patchen, Toledo and C. F. Hammer, Toledo, has prepared a program which should be of interest to all the electrical contractors of Ohio.

The program deals with many problems of the industry and includes numerous prominent speakers, among whom are A. Penn Denton, engineer-director, Armored Cable Section of National Electric Manufacturers Association; Stephen K.



**SERVES AS SECRETARY FOR BUILDING CONTRACTORS:** H. H. Herbert, head of the Michigan City Electric Co., Michigan City, Ind., finds time to hold office of secretary of the Associated Building Contractors of Michigan City, in addition to his successful contracting business.

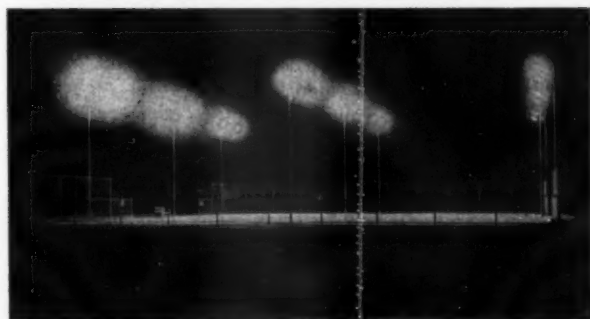
## There's Good Business Waiting for You These Nights



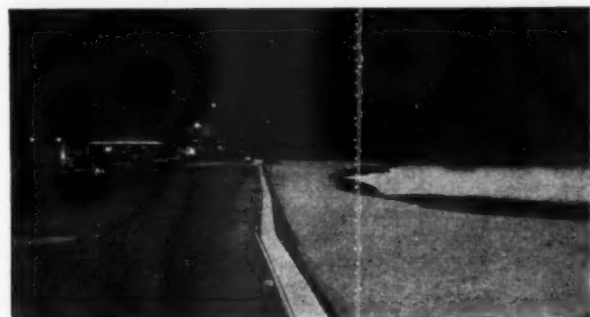
*Miniature golf course illuminated with G-E floodlighting projectors*



*Golf driving course floodlighted with G-E projectors*



*Tennis courts illuminated for night play with G-E projectors*



*Bathing beach floodlighted with G-E projectors*

**I**N step with baseball and football, promoters of other sports are growing night-minded. They're learning the financial value of floodlighting for evening business.

It's practically a new sales field for floodlighting projectors, wire, wiring devices, installation, and the kind of service that attracts attention and makes friends.

Here are some of the opportunities: miniature golf courses, driving ranges, tennis courts, swimming pools and beaches, trap shooting ranges, race tracks, fair grounds, and parking areas. G-E equipment has been successfully and permanently installed in hundreds of such localities; and there are scores of such opportunities near you.

Of course, our floodlighting specialists are ready to assist you in making sales and installations. A phone call to the nearest G-E office will receive prompt attention. G-E projectors and equipment are distributed through the General Electric Supply Corporation and other G-E distributors.

JOIN US IN THE GENERAL ELECTRIC PROGRAM, BROADCAST EVERY SATURDAY EVENING ON A NATION-WIDE N.B.C. NETWORK

# GENERAL

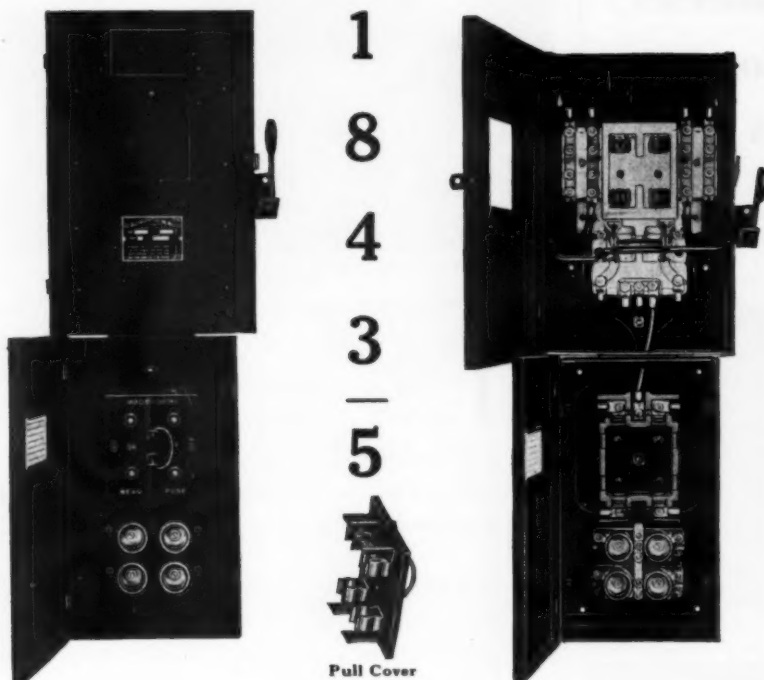


# ELECTRIC

710-115

SALES AND ENGINEERING SERVICE IN PRINCIPAL CITIES

# WADSWORTH



If you Buy on the  
"Basis"

of Quality, Service and Satisfaction

This Wadsworth Accessible Fuse Meter Service Switch with Range and Lighting Circuits is the switch to use.

It will meet your installation requirements and provide a

"SAFE"

"ADEQUATE WIRING"  
RANGE INSTALLATION

for your customers.

Write for Bulletin No. 23 for complete information.

**The WADSWORTH ELECTRIC MFG. CO. INC.**  
Covington, Kentucky



**STICKS TO REPAIR BUSINESS AND MAKES IT PAY:**—B. D. Davidson, Davidson Electric Co., Birmingham, Ala., long ago decided to build up a business on electrical repairs exclusively. Old customers call him automatically and new ones are added as trouble bobs up and they are referred to him. He includes motor repairs, but restricts his activities to ½ HP and under. Mr. Davidson has had 25 years experience, and has had his own business since 1924.

Mahon, Toledo Edison Co.; J. E. North, president of the Electrical League of Cleveland; Frank L. Lucas, chief electrical inspector, division of electrical inspection, City of Toledo; and Charles A. Pearson, president of the Standard Electric Stove Co., Toledo.

A ladies' program has been arranged with interesting entertainment. An invitation has been extended to all interested in the electrical contracting industry.

## New York Association Moves to New Quarters

The Electrical Association of New York will move from the Grand Central Terminal Building to new quarters in the Graybar Building May 1. The new offices will occupy 5100 square feet of floor space and will provide lounge rooms, reading rooms and all conveniences for members and visitors.

## Southern California Electragists Elect Officers

At the recent election of the Long Beach branch of the Southern Chapter, California Electragists, Inc., the following officers were chosen for the ensuing year: president—L. G. Wetzel, Kuster-Wetzel Electric Company (re-elected); vice-president—O. W. Newcomb, Newcomb Electric



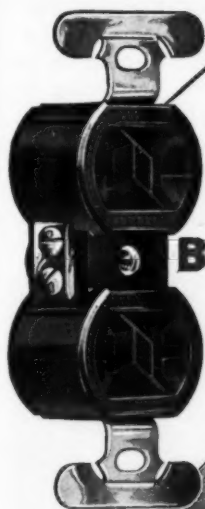
# H&H RECEPTACLES & PLATES

*for the  
show  
part  
of your  
wiring  
jobs*



These BAKELITE Convenience Outlets have a rich, attractive appearance pleasing to "live with". Your customers appreciate their modern design and distinctive beauty.

Finding Grooves which really work—make it easier to insert plugs in awkward places down behind tables, chairs or sofa. Plug prongs pressed against face of outlet slip into place by following contour of grooves, even in the dark.

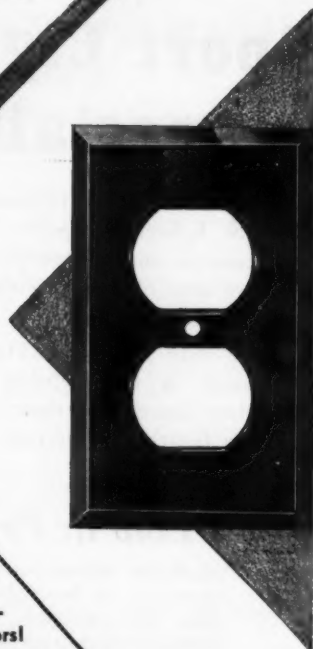


**ALL  
BAKELITE**

Cat. No.  
1913-G

BAKELITE Plates match the all-Bakelite Receptacles. Two styles of plate:—one with art border and vertical-ribbed surface; the other with plain border and matte surface. How they add to the "attraction value" of modern interiors!

Entire unit is moisture-proof: back, body and face. No moisture absorption to cause trouble on concrete jobs or in damp places. Every feature for your convenience as well as your customers'.

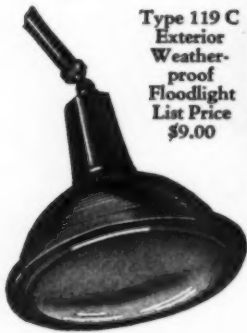


NEW 4-screw receptacle makes wiring easier. Has two large-head, No. 8 binding screws on each side. Reinforced yoke withstands strong pressure forward or back, helps in quick, accurate alignment of receptacle. One-piece contacts, with jaws that grip either tandem or parallel-blade plugs on both sides of blades, make broad, positive electrical connections.



**HART & HEGEMAN DIVISION**  
THE ARROW-HART & HEGEMAN ELECTRIC CO.  
HARTFORD, CONN. MAKERS OF ELECTRIC SWITCHES SINCE 1890

Type 750  
Floodlight  
List Price  
\$40.00



Type 119 C  
Exterior  
Weather-  
proof  
Floodlight  
List Price  
\$9.00



Type 148  
Floodlight  
List Price  
\$20.00



## Sport Lighting Specialties

**T**HERE are thousands of unlighted athletic fields, golf courses and swimming pools that are only making money during the daylight hours.

By only a small additional investment in floodlighting equipment they can double their money making hours and increase their profit considerably.

### Low in Price

Marbelite offers you a complete line of floodlights to go after this profitable business. Quantity production enables us to quote you extremely low prices.

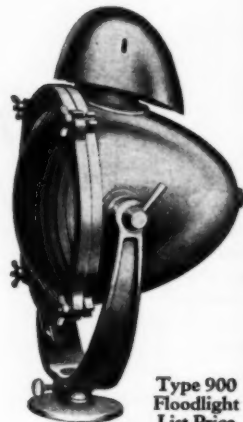
### High in Quality

Every Marbelite product is scientifically designed and manufactured to high standards of quality. Write us today for complete catalog.

## The MARBELITE ART PRODUCTS COMPANY

2652 WEST LAKE ST. CHICAGO, ILL.

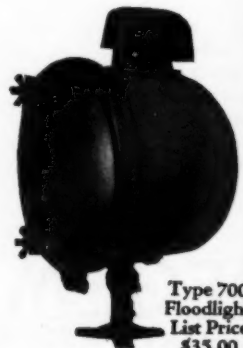
Marbelite Art Products Company,  
2652 W. Lake St., Chicago, Ill.  
Gentlemen: Please send me a copy of your latest catalog.  
Name .....  
Address .....  
City ..... State .....



Type 900  
Floodlight  
List Price  
\$75.00



Type 140  
Floodlight  
List Price  
\$24.00



Type 700  
Floodlight  
List Price  
\$35.00

Company; secretary and treasurer—R. W. Abright, of the A-Bright Electric Company. Plans for the year's activities were discussed. These include a program to educate the public in the use of electricity and co-operation with the power companies in the advertising of electrical appliances.

### Erie, Pa. Adopts Ordinance

The City Council of Erie, Pa. has adopted an electrical inspection ordinance which is effective at once. The ordinance is extremely simple yet most complete in that it adopts the National Electric Code and National Electrical Safety Code in their entirety.

The ordinance also provides for inspection by underwriters' inspectors and also provides that the provisions of the ordinance do not apply to structures reinspected once a year by established inspection agencies.

### Karr Parker Heads Electrical Firm

Karr Parker was elected president of McCarthy Bros. & Ford, Buffalo, N. Y., at a recent meeting of the board of directors, succeeding the late Edmond D. McCarthy.

Mr. Parker, as treasurer and vice-president, has been connected with the firm for sixteen years.

He is also president of the Asso-



**WIRES GENERAL ELECTRIC FACTORY:**—On the right is W. B. Caven, head of the Star Electric & Construction Co., Pittsburgh, Pa., with William J. Griffin, retail sales manager. This company is very successful in combining the wiring and merchandising ends of the business. The two recent outstanding jobs wired by this firm are an addition to the General Electric glass factory at Bridgeville, Pa., and the B. & O. freight house in Pittsburgh.

# Every electrical man who has wiring jobs to handle should have these books . . . . .



## What the six big volumes of this Library offer you!

Terrell Croft prepared this subscription library for practical electricians. The six volumes bring to you exact step-by-step directions for the installation of every type of conduit wiring job—they tell you how to handle every kind of lighting circuit and switch problem—they give you short cuts to saving time on maintenance routine—they give you useful tips on electrical machinery erection—they offer you practical, clear explanations of all kinds of A.C. armature winding jobs—they bring you a thousand armature winding, electrical machinery, and control diagrams—they show you the surest, quickest methods of locating and remedying circuit troubles. They cover the countless problems you are confronted with daily.

## More than 1,000 wiring diagrams—

The thousand wiring diagrams in these six books are alone worth the price of the entire library to any practical electrician. Many of these diagrams are unobtainable elsewhere; many more are very hard to get from any other source; all of them are much clearer and more helpful than most wiring plans available. They include:

- 300 lighting circuit diagrams, and a number of other practical working drawings
- 300 conduit-wiring diagrams
- 9 single-phase armature winding diagrams
- 52 two-phase armature winding diagrams
- 100 three-phase armature winding diagrams
- 570 electrical machinery and control wiring diagrams

This Library contains all the useful hows and whys and wherefores for wiremen, trouble shooters, armature winders, electrical maintenance men, and electrical contractors. It gives you the practical information that has earned for these books the friendship of countless successful electrical workers. With these six books you'll step ahead faster and you'll go further than the man who relies on his own limited experience.

**T**HOUSANDS of men in every part of the country are using the six big books of the American Electricians' Library to make their work easier and to push themselves ahead. If you, too, are determined to go further in electrical work, no matter what your position is now, you are invited to examine the American Electricians' Library for 10 days without any obligation to purchase it. Furthermore, if after you have examined these books you decide that they can help you as they have helped countless others, you can have Braymer and Roe's *Rewinding Small Motors* absolutely free.

## Terrell Croft's American Electricians' Library

\$1.50 in ten days and \$2.00 monthly for 8 months.

6 Volumes—over 2,000 pages—fully illustrated

Send no money—see these books for 10 days

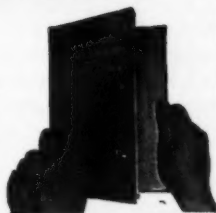
Let us send you these fact-packed books for ten days' free examination. There is no charge for the examination—no obligation to buy the books unless you want them. These books have helped, and are helping, so many men that it is no longer a question of "Will they help you?"—the question is "Will you let them help you?"

We could fill several pages with arguments telling how so many thousands of men have profited by the American Electricians' Library. But we'd like to leave it to the books—and we'll stand or fall on the outcome of your examination. You will agree that this is a liberal offer; and, frankly, we couldn't afford it if this examination offer didn't usually convince. We know how good these books are—we want you to see them for yourself.

## A Valuable Book Absolutely Free

After you have seen these books at your leisure—after you have used them in your work—decide whether or not they are going to help you. Then, return the books or remit only \$1.50 and then \$2.00 a month until \$17.50 has been paid. On receipt of your first payment Braymer and Roe's *Rewinding Small Motors* will be sent you absolutely free.

Fill in and mail this coupon now



## FREE!

if you act now

Braymer and Roe's **REWINDING SMALL MOTORS** comes to you absolutely free if you act now in getting your **AMERICAN ELECTRICIANS' LIBRARY**. This book will give you much practical information about rewinding all types and designs of fractional-horse-power motors.

## McGraw-Hill FREE EXAMINATION COUPON

McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York.

Gentlemen: Send me for 10 days' free examination, all charges prepaid, the **AMERICAN ELECTRICIANS' LIBRARY**, 6 volumes. If I find the books satisfactory, I will send you \$1.50 in ten days, and \$2.00 a month until the Special Price of \$17.50 has been paid. If they are not what I want I will return them. Upon receipt of my first payment you agree to send me free a copy of *Braymer & Roe's Rewinding Small Motors*.

Signature .....  
Residence Address .....  
City and State.....  
Firm or Employer.....  
Occupation..... E.C. 5-31



ciated Electrical Contractors of Buffalo and is national president of the Westinghouse Agent-Jobbers' Association.

### George T. Barrows

George T. Barrows, well-known electrical contractor-dealer in Pittsburgh, died January 27 at the age of 57.

Mr. Barrows was born at Lock Haven, Pa., in 1874, and after hold-



George T. Barrows.

ing various positions as newsboy, cigar clerk, census bureau employee and steel mill-hand, he entered the electrical industry in 1903 by joining the Allegheny County Light Co. In 1911 he started the American Electric Co. in Pittsburgh and in 1921 purchased the Cleland Electric Shop at Wilksburg, Pa., and the McKeesport (Pa.) Gas & Electric Supply Co., incorporating as the Barrows Electric Shop, Inc. In 1922 he centralized his efforts by closing the branch stores and using more space in the building he owned in Pittsburgh.

Mr. Barrows was a charter member of the Electrical League of Pittsburgh and in 1925 served as president and as manager in 1927. He was also a member of the Society for Electrical Development.

### Dead-front Switchboards Should Be Approved

A bulletin has just been issued by the California Industrial Accident Commission calling attention to the fact that order 701-1(f) of the Electrical Safety Orders and

Section 205(a) of the National Electrical Code requires that all materials, devices, appliances, apparatus, machinery and fittings be of approved type.

In the case of materials, fittings and appliances generally, most inspection departments are enforcing this requirement, but have not been requiring the use of approved dead-front switchboards.

The Commission does not state that all inspection departments should refuse to accept dead-front switchboards which are not included in the "List of Inspected Electrical Appliances," until manufacturers have had more time to make arrangements for obtaining such approval. However, it is recommended that all inspection departments call the attention of various manufacturers, manufacturing or distributing dead-front switchboards within their jurisdiction, to this requirement.

### New Officers for Colorado League

L. M. Cargo was elected president of the Electrical League of Colorado at its annual meeting recently held in Denver. The vice-presidents elected were E. E. Brazier; J. J. Cooper; R. G. Gentry and W. A. J.



**EQUIPPED FOR VERY LARGE WORK:**—On the left is M. G. Klippel, with C. A. Nichols, of the Nick-Klip Electric Co., Mobile, Ala. The third partner, L. A. Nichols, was missing. This firm recently completed an \$11,500 wiring installation on a new shed for the State Docks. The structure is 120 by 1140 ft. and the installation included a transformer vault, numerous motors and 352 reflector units. They also have to their credit a \$40,000 job on the Merchants National Bank.

Guscott; E. C. Headrick was elected secretary and Dean D. Clark, treasurer.

Electragists appointed to serve on the 1931 Board of Directors are



New Board of Directors for Colorado Are, Left to Right: E. E. Brazier, E. C. Headrick, L. M. Cargo, J. J. Cooper, D. D. Clark and W. A. J. Guscott.

W. A. J. Guscott; E. C. Headrick; Theo. Nollenberger; C. F. Oehmler; E. E. Stettler; D. D. Sturgeon and L. A. Bosmer.

One of the important things to be taken up during 1931 by the league is the promoting of adequate wiring for old and new buildings. Effort will be made to encourage the public to demand more adequate wiring installations than are now being provided by the architects and builders and it must be made to appreciate the convenience and utility of modernized wiring in all buildings now occupied. The league plans to educate the public in adequate wiring through the means of advertising during 1931.

### Doubles Membership in Year

Nine new members were added to the Southern Minnesota Electrical Association at its annual meeting held recently at Mankato, Minn. During the past year the association has nearly doubled its membership and is actively engaged in constantly adding new members.

Plans were outlined at this meeting to include a more comprehensive effort to work out the contractors' and dealers' problems and to promote better relations between this group, the jobbers and public utilities.

The association is also actively co-operating with the A.E.I. Chapters in Minnesota in securing the passage of a state electrical code and uniform license laws, during the present session of the state legislature.

A questionnaire taken at this meeting showed that a majority of the members had had a slight increase in their business during 1930, and it is expected that business will continue to increase during 1931.

The 1930 officers were reelected as follows: J. W. Hruska, Mankato, Minn., president; Charles Bailey, Albert Lea, Minn., vice-president and William A. Ritt, St. Peter, Minn., secretary-treasurer.

#### McGraw Award Closing Date

July 1 has been set as the closing date for receipt of recommendations for the 1931 James H. McGraw Award for Electrical Men. The Award consists of four presentations each year: The manufacturer medal, the wholesaler medal, the contractor-dealer medal and the medal for co-operation, each accompanied by a purse of \$100.00 in gold. The purpose of these presentations is to give public recognition to men who contribute to the advancement of the electrical industry.

The Committee of Awards which selects the recipients is appointed by the Society for Electrical Development and each branch of the industry has a representative.

#### Nassau-Suffolk Contractors Elect Officers

The Electrical Contractors Association of Nassau-Suffolk Counties, Inc., Hempstead, N. Y., has elected the following officers for 1931: Charles D. Cottrell, Glen Cove, N. Y., president; Charles Yandik, Glen Cove, vice president; George Geisler, Glen Cove, treasurer and Sterling S. Dodge, Great Neck, L. I., secretary.

Among the activities of the association for 1931 is the adoption of a building code in the towns and villages covered by this association. If a building code is in existence in any of the towns, plans will be made to extend it to cover the electrical contractor's license as well.

#### Los Angeles Estimators Discuss Power Applications

Power applications, control and distribution are the subjects to be discussed at the April and May study meetings held by the Los Angeles Estimators' Section, California Elec-

They LOOK good---  
they ARE good!



## BlueBell

### DOOR BELL TRANSFORMERS

—are THERE for APPEARANCE,  
PERFORMANCE & DURABILITY

But their attractive appearance is a side issue with BlueBell Transformers. They are primarily made for dependability. When you install a BlueBell, you've done a permanent job, for no BlueBell has ever worn out or failed to work. It is conscientiously built to give lasting, faithful performance. Our guarantee is unlimited. That's why BlueBell, for the last seventeen years, has enjoyed larger sales than any other door bell transformer on the market.

*Always ask for them by name*

# KILLARK

ELECTRIC MANUFACTURING CO.

3940 Easton Avenue - - St. Louis, Mo.



## SUPER-BENDING QUALITY WITH RUGGED LONG LIFE . . . .

Fretz-Moon Conduit bends easily and perfectly to any required shape for any location—without cracking or chipping the enamel, without scaling the galvanizing or opening at the weld.

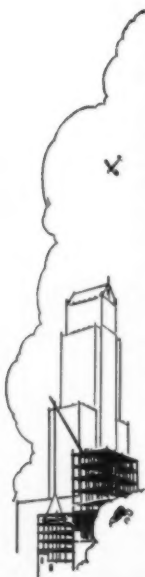
Yet this increased ductility detracts nothing from the rigidity and long life of Fretz-Moon Conduit. Carefully selected steel skelp, a patented "continuous" process, pure zinc spelter and "flexible" enamel afford quality that insures long life, even under the most exacting conditions.

Choose from these three brands—ENAMELITE, black enameled inside and out—ELECTRO GALVITE, enameled inside and electro-galvanized outside—HOT DIPPED GALVITE, galvanized heavily both inside and out with a heavy coat of baked-on enamel over the inside galvanized surface.

FRETZ-MOON CONDUIT saves time in installation and money to everyone concerned.

*Don't hesitate to recommend FRETZ-MOON CONDUIT for every job. It's dependable.*

Fretz-Moon Tube Company, Inc.  
Butler, Penna.



# FRETZ-MOON

## RIGID CONDUIT

tragists. In June and July signal devices will be made the topics of discussion.

The plan of study meetings was started early this year, and during the months of February and March all meetings dealt with some phase of illumination design, installation or data. If this plan proves successful during the next few months, other topics will be determined upon for the balance of the year.

Officers elected to serve this year to carry out the above plan are Larry Ellett, Quality Electric Works, president; Harry Hamm, Hamm & Smith, vice-president and P. A. Shrader, secretary. The executive board consists of A. Ogilvie; P. R. Mactolf; Robert Booth and W. Y. Hyde.

### Slight Revision in Atlanta Code

Certain revisions have been made in the Atlanta (Ga.) electrical code recently passed, one of which is to permit No. 8 mains and a 30 amp. switch in houses having an area less than 2000 sq. ft. This revision was made to enable small builders to put houses on the market at a minimum cost.

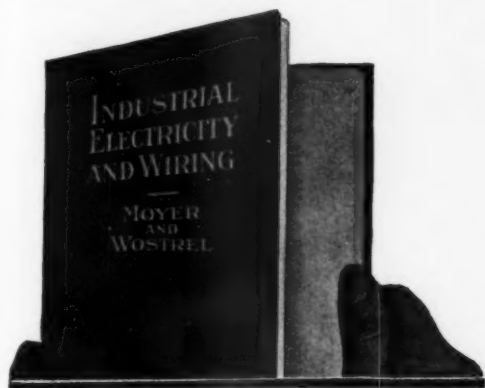
Other revisions are that No. 12 will be permitted on motors 1½ h.p., 220 volt, single phase; in new residences and apartments where not more than three receptacles are



**BUILDS BUSINESS ON MEDIUM JOBS:**—J. H. Wilson, of Wilson and Garner, Mobile, Ala., says his firm will tackle anything there's an honest dollar in, but as a matter of fact they are residence specialists and have developed a nice business on new and old work and repairs, guaranteeing installations.



## A "how-to" book for the practical electrician



Here is a book that offers the practical worker a thorough training in electrical wiring for every industrial application. In addition to presenting standard, economical and efficient methods for doing every type of wiring, it also offers a thorough grounding in electrical theory; in the action and application of electrical equipment; the principles of lighting and power circuits; together with much other information needed for the effective handling of this work.

### Industrial Electricity and Wiring

by JAMES A. MOYER

Director of University Extension, Massachusetts Department of Education

and JOHN F. WOSTREL

Instructor in Electrical Engineering, and Supervisor in Charge of Industrial Subjects,

Division of University Extension, Massachusetts Department of Education

469 pages, 5½ x 8, 281 illustrations and diagrams—Price \$2.75 postpaid

### A complete manual of electricity and standard methods of industrial wiring

#### Some of the many topics covered

In the first and second chapters you will find a study of effects produced by electric currents, units of measurement, and practical applications. Following this, the book gives you detailed instructions on wiring conduits and moldings; wiring old buildings; wiring for industrial and household appliances; wiring generators, motors and transformers. Then you are given details on industrial and residential lighting, theater services, out-of-door uses, distribution systems, circuit control apparatus and many other applications.

#### 281 charts, diagrams and drawings

Everything is clearly illustrated by diagrams, charts and tables. The practice described throughout the book is based on the 1929 National Electrical Code. In the chapters devoted to practical applications of wiring for electric light and power, material on the planning of circuits and estimating costs is included. A glance over the chapter summary will give you some idea of the wide compass of this work—but you should see this book to really grasp its scope. Take advantage of this free examination offer! Send for it to-day!

#### Chapter Summary

1. Fundamental Theory and Units
  2. Splicing and Soldering Wires
  3. Calculation of Wiring Systems
  4. Wiring Methods and Types
  5. Details of Wiring in Conduits and Moldings
  6. Wiring Old Buildings and Unit Costs
  7. Industrial and House Appliances
  8. Electrical Generators and Generator Wiring
  9. Industrial Electric Motors and Motor Wiring
  10. Transformers and Connections
  11. Industrial Wiring
  12. Wiring for Theater Services
  13. Residential Lighting Equipment
  14. Estimating Industrial and House Wiring
  15. Out-door Wiring
  16. Distribution System
  17. Circuit Control Apparatus
  18. Grounding of Systems and Equipment
  19. Wiring for Miscellaneous Services
- Appendix—Index—Reference to National Electrical Code.

This is a comprehensive exposition of the entire field of practical electrical wiring. It covers everything from fundamentals of electrical theory right down to the most effective methods for handling the newest electrical equipment.

The treatment is simple, progressive and thorough—aimed so that the electrician can acquire the most helpful combination of the fundamentals underlying his problems and an ability to work most economically and efficiently through a knowledge of standard procedure.

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At your request we will send you this book for 10 days' free examination. You owe it to yourself to see this book—if it can solve just one problem facing you it will amply repay you for any trouble you might experience in sending for it. See this book—use it for 10 days and then decide if this isn't a book you will want to have handy always.

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### McGraw-Hill FREE EXAMINATION COUPON

McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York.  
You may send me on 10 days' approval Moyer and Wostrel's INDUSTRIAL ELECTRICITY AND WIRING. Price \$2.75 postpaid.  
I agree to remit for the book or return it postpaid within ten days of receipt.

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Symbol of Conduit  
Quality*



*Made by*

**THE  
STEELDUCT  
CO.**

**Youngstown  
Ohio**



**INDUSTRIAL AND COMMERCIAL  
WORK THEIR SPECIALTY:** A. J. Bambula and G. H. Bach of Bambula-Bach Electric Co., Chicago, specialize on industrial and commercial electrical construction work. It isn't very often that they are found in the office together, but this picture was taken on one of the rare occasions.

to be installed, they may be connected to circuits serving ceiling and bracket outlets, if not located in kitchens or breakfast rooms; wall switch required in kitchen may be omitted if a ceiling type fixture equipped with pull switch is used, and on show window lighting 1600 watts or not over 8 outlets will be permitted on a single circuit.

#### **Nelson Heads St. Paul Contractors**

Otto Nelson was elected president of the Master Electrical Contractor Dealers' Association of St. Paul, Minn., at its annual meeting; William Mulligan was elected vice-president; Joseph Fischler, treasurer; Ray Hoffman, auditor, and W. F. Lindberg, secretary.

#### **Additional Inspectors Urged for El Paso**

At a meeting of the Electrical League of El Paso, Texas, held recently at the Hotel Hussmann, Lloyd Rothman, Gem Electric Company, representing the Electragists, urged that the city be asked to appoint additional inspectors. Following a discussion of the matter, a motion was made and seconded that a committee be appointed to present this matter to the city council. This committee will be appointed at a later date, and

"It has a grip like its namesake"



## **Split Knobs**

**T**HESE are the safe, approved knobs for all types of residence wiring. They mean better jobs at no added cost. Bull Dog Split Knobs, together with Illinois Porcelain Tubes, Cleats and Solid Knobs form a complete line of standard porcelain.



*Sold Through Wholesalers*

**Illinois Electric Porcelain Co.  
Macomb, Illinois**



# One Pry *and it's* OUT

**T**HERE'S nothing stubborn about Pri-Outs! You'll find that out when you use switch or outlet boxes Pri-Out equipped. The tough, old-fashioned knock-outs had to be pounded, twisted and bent before they'd come out—but Pri-Outs—well, one pry—and they're out!

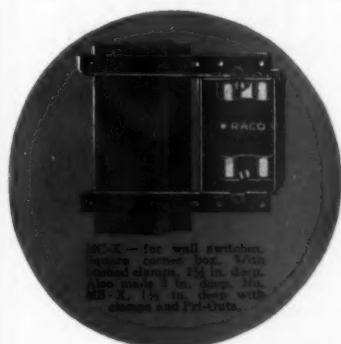
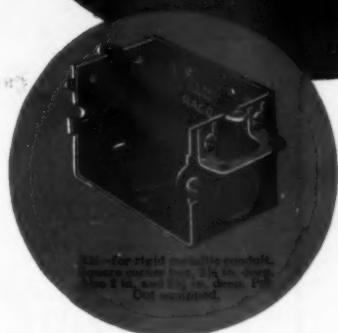
The secret of Pri-Out ease is leverage. At the bottom of the Pri-Out is a slot just the right size to allow a screw driver or some other prying tool to be inserted. So all you do is insert the tool—bear down on it—and up and out comes the Pri-Out! Simple, isn't it? Yet it's the first and only important improvement made in box construction.

Because the Pri-Out comes out—instead of being knocked in, there's an extra  $\frac{1}{8}$ " of room inside the box. That means more room for clamps and interior parts—hence easier wiring—quicker work. And remember—Pri-Outs need no twisting and bending—avoiding all finger injuries.

Pri-Outs are fully covered by American and Canadian patents. Leading box manufacturers are now licensed by RACO to use the Pri-Out feature. Order RACO Pri-Outs through your jobber. If, by chance, he does not as yet have this accepted, modern equipment, send us your order mentioning his name—and we'll bill you through him.

**ROACH-APPLETON MANUFACTURING CO.**  
**SOUTH BEND, IND.**

**RACo**  
**PRI-OUTS**  
TRADE MARK REGISTERED





## KECKLEY FLOODLIGHTS



TYPE K 16G  
Cast Aluminum Housing, Mirrored Glass Reflector, Trunnion Mounting, 1000 Watts PS or G Lamp.

There is a Keckley Floodlight for every purpose in 12", 16", 18" and 25" sizes. For buildings and lighting installations where long life is a fundamental requirement, the cast aluminum types with mirror glass reflectors are recommended. For sports lighting, where first cost is a vital factor, the sheet aluminum line with cast aluminum doors or the porcelain enameled closed type units are available.

The Electrical Contractor or Jobber has access to a complete line from which he can select not only depending upon installation requirements but also to suit the consumers budget for any particular job.

Many of these new types have self-contained wiring, eliminating the cost of fittings otherwise necessary, which saving will in most every instance earn the lighting job for the contractor against competition.

The Keckley Company offers complete engineering assistance in recommendations and plans for any lighting problem whether it be for sports-lighting, building illumination or an industrial installation.

Some territories are yet available for representation. We invite your consideration of our line which will be most profitable to you.



TYPE SE 14-D  
Porcelain Enameled Closed Type Unit, Heat Resisting Diffusing Lens, PS 300 or 500 Watt Lamp, Ball and Socket Adjustment.

**O. C. KECKLEY COMPANY**  
565 Washington Blvd., Chicago, Ill.

will outline the advantages of this suggested change at a future meeting of the city aldermen.

### Associated N. Y. Contractors Reelect Bush

The Associated Electrical Contractors of New York City, at their first annual meeting held recently at the Hotel Commodore, reelected A. Lincoln Bush as president for the coming year.

This comparatively young association is principally interested in construction work and the creating of goodwill among its members and the building industry. For the past year it has successfully operated a survey bureau enabling its members to prepare their estimates in a more intelligent and complete manner.

### Wants Ordinance to Conform with Code

The El Paso (Tex.) Chapter of Electragists is working intensively with the city electrician to change the ordinance which has been in effect for the past ten years in an effort to bring it up-to-date according to the National Electrical Code and other city ordinances.

Although this chapter is only a few months old, the members are cooperating 100 percent, and a great deal of improvement in the business



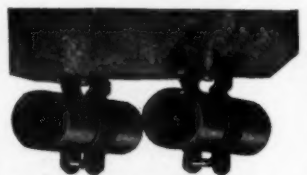
### DEALERS LEARN COOKING:

Through the efforts of Frank J. Connolly, secretary, California Electragists, Southern Chapter, and L. O. Wetzel, president of the Long Beach, Calif. Chapter of Electragists, a special cooking school was held recently in Long Beach for dealers and salesmen to help them in mastering the use of electric ranges. In the corner of the "Kitchen" shown above are Frank J. Connolly (left), Mrs. Ethel Goodwin, home economist, L. O. Wetzel and J. Campbell Hoyt, range specialist.



### HANGER, with Porcelain Bushing

Increases the speed in running conduit or cable. They are made of spring steel with high quality porcelain bushings. For circuits over 550 volts.



### HANGER, without Porcelain Bushing

For circuits under 550 volts. They are quickly and easily put in place—One bolt or screw fastens them securely.



### JIFFY CLIP

Requires only one screw to make a secure, neat and permanent job.

With this clip both labor and clip costs are materially reduced.



**MINERALAC ELECTRIC CO.**  
25 N. Peoria St. Chicago, Ill.



**RESIDENTIAL WIRING SPECIALIST:** Charles Osberg of the Riverside Electric Co., Riverside, Ill., who has been in business 26 years in one location, specializes in residential wiring using the Red Seal plan of house wiring.

of the contractors in general has resulted. When the 1931 plans are completed, the chapter will have a definite goal to work for during the year.

#### William Hall

William Hall, first electrician of Dayton, Ohio, died at his home on March 19.

Mr. Hall installed the first telephone and wired the first house for electricity in Dayton, and was head of the William Hall Electric Co., from 1883 until he retired about 11 years ago.

#### Issues Standard Wiring Specifications

The Electric Association, Chicago, Ill., has issued a file folder size, loose-leaf, compilation of standard electric wiring specifications for dwellings.

This standard outline of specifications for dwellings has been developed by the association to create a more definite understanding between those who design and those who install electric wiring systems of this type. This outline was prepared by a committee of the Electric Association under the direction of and with the assistance of the joint committee of materials and methods of the Chicago Chapter, A.I.A., and the Illinois Society of Architects. The

## Make your wiring jobs earn you extra profit!



**A**LMOST every wiring job can bring you an extra order and extra profit because almost every home or commercial building needs exhaust or ventilating fans.

Don't reach for your hat and close your tool kit until you've told your customer about his need for better ventilation. You can sell exhaust fans and extra wiring jobs right on the spot this easy way. Try it for bigger profits.



### Emerson Exhaust Fans Build New Customers For You

Every Emerson installation means new friends for you because Emerson performance is so efficient, dependable and trouble free. Emerson exhaust fans are quiet, powerful and built to last. Construction is of pressed and welded steel for durability and freedom from vibration. 12 to 36-inch sizes. AC and DC. Ask your jobber or write for full details.

THE EMERSON ELECTRIC MFG. CO.  
2018 Washington Ave., Saint Louis  
806 W. Washington Blvd., Chicago  
155 Sixth Ave., New York City

# EMERSON EXHAUST FANS

MADE BY THE MAKERS OF EMERSON MOTORS



**Kellems Products, Inc.**  
New York,

announces the  
acquisition of the

Joint Committee of the Architectural Societies has endorsed the use of this standard outline.

These specifications include all that is necessary for a complete wiring system from the local electric service company's service to each outlet throughout the house, including service switch, feeders, distributing panel, circuit wiring, receptacles, local switches, bells, telephone conduit, etc. It also includes a table of standard wiring symbols.

#### **Tri-Cities League Elects Officers**

The Electrical League of the Tri-Cities, Rock Island, Ill. has recently elected the following officers: H. M. Heysinger, electrical contractor, president; E. L. Johnson, vice-president; W. F. Hansgen, treasurer and H. P. Wilson, secretary-manager. Also L. W. Zeng, C. R. Robbins and P. A. Schlueter were among the contractors elected to the executive committee.

#### **Red Seal Active in Vancouver**

Forty-one percent of the total houses built in Vancouver, (B. C.), and district during 1930, and costing more than \$3,000, were wired to Red Seal standard, which includes the installation of electric range, according to the annual report of the Electric Service League of British Columbia, recently published. In addition 27 percent were wired to Red Seal standard, but without electric range. Altogether during the year Red Seal certificates were issued to 273 homes and three duplex houses. Eighteen out of twenty



**EXPERIMENTAL WORK HIS HOBBY:**—Karl Kozian, of the Times Electric Company, New York, spends most of his spare time working out improvements on electrical devices.

## **UNIVERSAL CABLE GRIP CO.**

Inc.

Skaneateles, New York

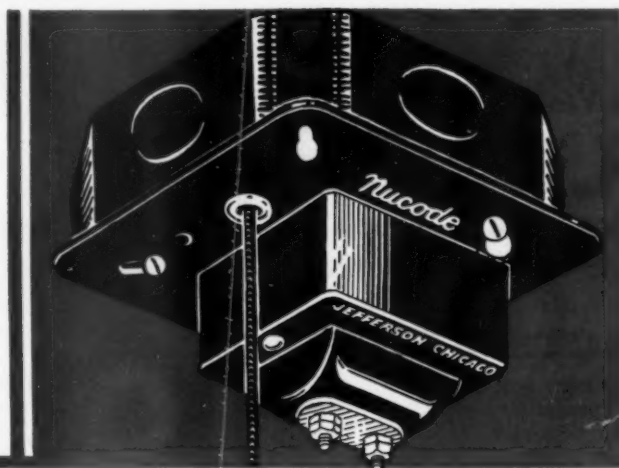
for a quarter century the  
largest cable grip manu-  
facturers in the world.



**Kellems Products, Inc.**

6 Varick Street, New York

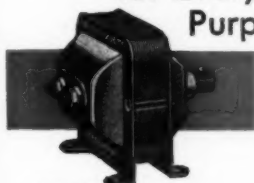




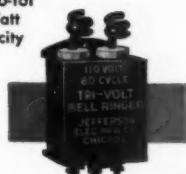
**JEFFERSON  
NUCODE  
TRANSFORMERS**

## SAVE TIME and MATERIAL

### A Transformer for Every Purpose



**WIZARD**  
No. 230-101  
25-Watt  
Capacity



**TRI-VOLT**  
No. 230-121  
Three  
Secondary  
Voltages.  
6, 12, 18 Volts



**Type G**  
100 Watts

**Heavy Duty  
Transformers**  
50 to 500 Watt  
Capacity. Wide  
Selection of  
Secondary Voltage

**Type E**  
250 Watts



**I**n estimating a job, every little saving counts . . . helps hold down your quotation . . . giving you a better chance to get the work.

When figuring on bell-ringing transformer installations you can allow for a saving in both time and material if you use Jefferson Nucodes. They permit neat and easy installation even by a novice. All that is necessary is the splicing of two wires and the tightening of two screws. The expense of placing the wires in the conduit and the additional labor are eliminated.

Furnished with round or square cover. The round cover type fits both 3 1/4" and 4" octagon outlet boxes. The square cover type fits both 3 1/4" and 4" octagon boxes and 4" square boxes. And the same outlet box can be used to attach the Jefferson Nucode Bell-Ringing Transformer and to hang a drop cord.

Nucode is a quality transformer, guaranteed by the largest makers of small transformers, yet sells at a low price, consistent with quality. It is designed for residences and small apartment houses and will operate without core loss, electric bells, buzzers, door openers, etc.

For the larger signalling systems in industrial plants, Jefferson Types "A" to "F" and the new 100 watt Type "G" are recommended. Order from your wholesaler.

### **JEFFERSON ELECTRIC COMPANY**

1503 West 15th St., Chicago, Ill.

Pioneer Manufacturers of Transformers for Bell-Ringing and Signal Systems, Radio, Toys, Oil Burner Ignition and Control Gaseous Tube Signs, Switch and Outlet Boxes, Plug Fuse and Knife-blade and Ferrule-type Renewable and Non-Renewable Fuses.

# JEFFERSON BELL RINGING and SIGNAL TRANSFORMERS

(A-1015)

When Things Go Wrong  
ELECTRICALLY—  
**Test-O-Lite**

A PRACTICAL POCKET TESTER

—Indispensable to Electrical Workers  
and In the Household

**DETECTS FAULTS**

in electric light and motor circuits, auto  
spark-plugs, household appliances,  
radio sets, etc.

List  
\$1.50

Discounts on 100 or  
more—with plates bear-  
ing your firm name, mak-  
ing an exceptional souvenir  
for any anniversary or conven-  
tion.



**L. S. BRACH  
MFG. CORP.**

NEWARK, N. J.  
TORONTO, CANADA

Locates

**Burnt-Out Fuses**

TESTS Current 110 volts up to  
550 volts A. C. or D. C. in-  
dicating the voltage.

TESTS leaks up to 20  
megohms. Detects  
live and ground  
wires.

Patented  
Oct. 21, 1930  
No. 1,778,883

Carry Test-O-Lite in your pocket as you carry a fountain pen.



**HAS INCREASED BUSINESS IN  
SHORT TIME:**—Four and a half years  
ago, F. E. Jackson, Iowa City contrac-  
tor, was a wireman, which is nothing  
new until we inform you that he has  
developed a wiring and merchandising  
volume out of proportion to the time  
mentioned. His activities include wir-  
ing, radio and appliance sales, lighting  
miniature golf courses, Neon sign in-  
stallations and holiday street lighting.

apartment houses were wired to Red  
Seal specifications, representing 337  
suites. The total Red Seal certi-  
ficates issued in this district to the  
end of December last was 2,916.

*Outdoor*  
**FLOODLIGHTS**  
*for every purpose*

REQUIREMENTS vary—so Kliegl floodlights are made in  
a number of different types to permit a selection best  
suited to your needs—giving the maximum light, at a mini-  
mum cost, with the utmost satisfaction. They are made for  
close-range or long-range lighting, with a concentrated or  
wide-spread light beam, and every unit is guaranteed, well  
made, highly efficient, and economical.

Advise us about your conditions—what you want to light,  
and the problems that confront you. We will gladly offer  
recommendations, and send descriptive literature of our com-  
plete line of outdoor floodlights.

**KLIEGL BROS**

UNIVERSAL ELECTRIC STAGE LIGHTING CO., INC.

321 WEST 50th STREET NEW YORK, N.Y.



No. 1620



No. 558



No. 556



No. 565



No. 1600



No. 1610

**KLIEGL OUTDOOR FLOODLIGHTS**

**Must Conform to National  
Code**

Incorporated in a building ordi-  
nance recently passed by the Burgess  
and Town Council of the Borough of  
Downington, Pa., is a section cover-  
ing electrical installations which states  
that all electrical installations shall  
conform to the requirements of the  
National Electrical Code and must be  
inspected by the Philadelphia Subur-  
ban Underwriters' Association.

**Publishes Code of Arbitration  
Practice and Procedure**

The American Arbitration Asso-  
ciation announces the publication of  
a Code of Arbitration Practice and  
Procedure, presenting for the first  
time in this country a standard, or-  
ganized practice of arbitration now  
in use by business men and attorneys  
and which may be applied to the set-  
tlement of business controversies in  
any jurisdiction in the United States.

The Code will be distributed by  
the Commerce Clearing House, Inc.,  
Loose Leaf Service Division of The  
Corporation Trust Co., and is the

## REFRIGERATOR CASE LIGHTING



No. 40 Exterior  
Refrigerator Unit for  
T10 Standard Base  
Tubular Lamp.

Standard finish  
nickel or statuary  
bronze plated.

Refrigerator Reflec-  
tors are also available  
in completely wired  
and assembled sets. See  
catalog No. 8-A, page  
No. 15.

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Reflectors

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Showcases, Stores, Banks,  
Theatres and  
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catalog No. 8-A.

DAY-BRITE COMPANY  
3825 Laclede Ave. - Saint Louis

result of five years' experience in the American Arbitration Tribunal, in which 2500 parties and 500 attorneys have participated in the arbitration of controversies involving many millions of dollars and substantial rights. The Tribunal is now effective in 1700 cities.

The Code will be accompanied by a monthly information service bulletin providing arbitrators, parties and attorneys with up-to-date information on current arbitration affairs.

### Re-elect Maybee President

R. P. Maybee of Maybee & Shipley Electric Co. was re-elected president of the Association of Electra-gists, Northern Utah Chapter, Salt Lake City. F. H. Eardley, contrac-



R. P. Maybee

tor, was elected vice-president suc-ceeding G. J. Guiver, who was elected in November to fill the unexpired term of A. B. Christensen; F. C. Wolters, of the Modern Electric Co., re-elected treasurer; R. E. Folland, executive secretary of the Electrical



**SPECIALIZES ON DIFFICULT JOBS:**  
A. W. Brown, Brooklyn contractor, specializes on installations where unusual engineering problems arise. The nature of the jobs have ranged from ship yards to morgues.

## Delighted Clients plus EXTRA PROFITS!



### When you include VELVATONE Door Chimes!

✓ This distinctive, modern door call requires no "selling"...just include it in your estimates...your clients will be delighted, for Velvaton Door Chimes make the necessary door-call a thing of beauty, both to see and hear! On every Velvaton installation you make TWO profits...a liberal discount on the chimes and an installation profit, too. Thousands of Velvaton Door Chimes are now in use. They are quickly installed...simple in operation...and require no servicing.



#### A SIZE FOR EVERY HOME

Model 1-C-1, 1 chime complete...\$16.50

Model 2-C-4, 2 chimes complete...\$35.00

Model 3-C-6, (illustrated) 3 chimes, complete...\$45.00

Model 4-C-8, Largest standard model, 4 chimes complete...\$55.00

Ask your jobber or write

#### ELECTRIC SIGNAL COMPANY

411 Architects Bldg., LOS ANGELES

ELECTRIC SIGNAL CO.,  
411 Architects Bldg., Los Angeles.

Please send us your new catalog and discount information.

Name \_\_\_\_\_

Address \_\_\_\_\_



## YOU CAN DO

a better and more economical job with RALCO Fittings!

They are correctly designed and priced.

Those illustrated below are especially desirable for flood lighting installations.



No. 52A



No. 52P

Weather proof RALCO Receptacles and Plugs with self closing covers. Especially desirable for mounting on Poles, Buildings, etc.



52AN



52PN

Watertight RALCO Receptacles and Plugs with Union Gasketed nut and housing. Especially desirable for mounting where a watertight fitting is desirable.

Both the Weather proof and Watertight Receptacles are made with different type Housings than Type A shown. Ask for Bulletins 101-A, 102 and 105.

The Receptacles have Cast Iron Cadmium finished Housings. Can be furnished for either  $\frac{3}{8}$ " or  $\frac{1}{2}$ " Conduit.

Plug Housings are Drawn Steel, Cadmium finished or Cast Aluminum, if so ordered. Have an extra terminal for grounding wire. Plugs are furnished with watertight Cord Grips, similar in design to the RALCO Cord Grip shown below. Circuit Breaking rating of both Receptacle and Plug, 30 Amperes, 125 Volts D. C., 250 Volts A. C.



RALCO Cord Grips are Watertight and take off all strain from wire terminal in Plug or on Flood Light Case. Made for Cables and Cords  $\frac{3}{4}$ " to  $1\frac{1}{2}$ " O. D. Ask for Bulletin 100.

**Ralco Manufacturing Co.**  
Designers and Manufacturers  
125 North Albany Avenue  
Chicago, Illinois



**OPERATES FROM HOME BUT PLAYS THE GAME:**—Paul E. Carrie, Carrie Electric Co., Mobile, Ala., although having no shop, has built a nice business and stands well with wholesalers and manufacturers. He has the confidence of architects and builders, thus getting in on large work. He has also done an unusual amount of work for the Southern Bell Telephone Co.

League of Utah, was elected to succeed R. W. Davis, who resigned.

The chapter has a legislative committee consisting of Ed. H. Eardley, chairman; C. L. Felt, G. W. Forsberg; Blaine Grey and J. C. Jacobs, which is actively engaged in preparing a State Enabling act to present to the state legislature.

### Akron League to Promote Wiring

At the annual meeting of the Electrical League of Akron, Ohio, an increased budget for 1931 was approved and the money will be used to promote wiring, industrial lighting and appliance activities.

The wiring activities will be a greater effort to secure more Red Seal installations and lighting activities will take the form of direct-by-mail literature to commercial and industrial institutions.

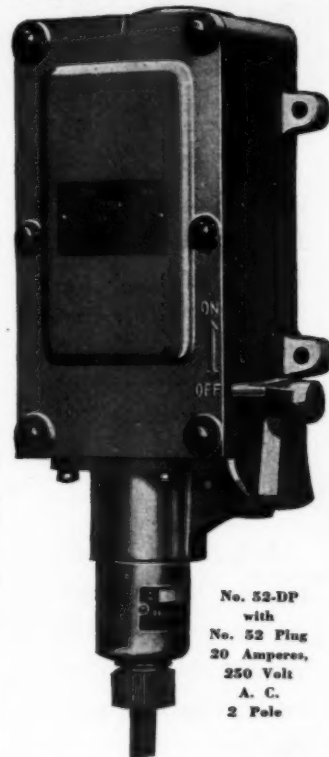
The board of directors elected at this meeting are: G. F. Bertke; J. B. Conley; F. C. Davern; S. C. Hansen; L. F. Heinzman; F. A. Nighswander; Morris Sacks; H. O. Smith; L. G. Tighe; Harvey T. Uhl and W. B. Wolfe.

The board later elected officers as follows: L. G. Tighe, president; G. F. Bertke, vice-president; J. B. Conley, secretary; F. A. Nighswander, treasurer and S. C. Hansen, managing director.

## YOU CAN NOW

secure a tested and approved  
**Receptacle and  
Plug for  
Portable Cord**

use in Grain Elevators, Flour Mills, Starch Mills, Feed Mills and such places where similar explosive dusts are present. (Group G)



No. 52-DP  
with  
No. 52 Plug  
30 Amperes,  
250 Volt  
A. C.  
2 Pole

The RALCO No. 52-DP Receptacle and Plug, comply with Code Rule 3204, Section M 1930 Code, reading as follows:

"Receptacles and attachment plugs, if used, shall be so connected, as a part of a unit device with a dust tight interlocking switch that the plug cannot be removed while the switch is in the "on" position or approved devices which seal the arc, made when current is interrupted, by means of an explosion-proof or a vapor-proof enclosure shall be used. Such Receptacles and Plugs shall be of the polarized type providing a connection for the grounding wire of the portable cord."

Mr. Contractor, if you are now, or when you do, figure a wiring job for Group G locations, do not argue with the inspector. Write us for prices and make your jobs safe.

**Ralco Manufacturing Company**  
Designers and  
Manufacturers

123-141 N. Albany Avenue  
Chicago, Ill.

DISTINCT IN DESIGN

UNIQUE IN LIGHTING RESULTS



## The Benjamin "Play Area" Floodlight

**A New Unit for  
the Lighting of  
Outdoor Recre-  
ational Areas**

Meets the Four Basic Requirements  
of Modern Lighting of Outdoor  
Sports and Recreation.

Provides uniform and strong illu-  
mination on the ground and to the  
front and sides of the unit.

Directs adequate light on vertical  
surfaces to be illuminated such as  
players, apparatus, and other ob-  
jects.

Directs part of the light into the  
upper areas permitting players and  
spectators to follow an object in  
flight such as a baseball or football.

Minimizes annoying glare by shield-  
ing the lamp and prevents it from  
interfering with the vision of the  
players or spectators.

*Designed*  
**BENJAMIN**

The new Benjamin Play Area Floodlight, No. 5752, gives the electrical contractor something distinctive in design and unique in lighting results, with which to go after the business of lighting outdoor sport and recreational areas.

An open type, wide angle floodlight with a reflecting surface of special diffusing porcelain enamel and an inner reflector of oxidized aluminum.

Gives uniform illumination over an extensive ground area in front and to the sides of the unit and at the same time directs a portion of the light to the upper areas over the playing field. Weatherproof. Easily installed.

For the lighting of Children's Playgrounds, Tennis Courts, Croquet Courts, Horseshoe Pitching Courts, Football and Athletic Fields, Miniature Golf Courses, Swimming Pools, Industrial Yard Areas.

Send for New Bulletin containing illustrations and complete description, with data for planning the lighting installation.

**BENJAMIN ELECTRIC MFG. CO.**

General Offices and Factory:

**DES PLAINES (Chicago Suburb) ILLINOIS**

Divisional Offices:

Chicago

111 N. Canal Street

New York  
217 W. 17th Street

San Francisco  
148 Bryant Street

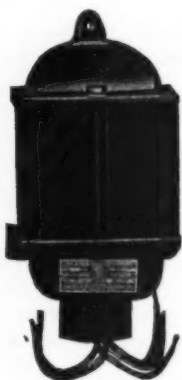
## THE OAMCO FLOODLIGHT



Contractors will find the OAMCO floodlight suitable for lighting gasoline filling stations, parking lots, playgrounds, bathing beaches, tennis courts, golf courses, football fields, storage yards, construction work, etc. Made for 750-1000-1500 watt general service lamp. Reflector is oxidized aluminum inside and outside. Highly efficient and easily cleaned.

Porcelain Mogul socket with service entrance fitting. Bracket can be adjusted to any angle. Can be attached to pole or flat surface. Send for floodlight bulletin No. 79.

**OVERBACH & AYRES MFG. CO.**  
413 S. Clinton St. Chicago, Ill.



Send  
for  
Bulletin  
630

### for Lower Sports Lighting costs Install **TRESTER** AIR COOLED TRANSFORMERS

On sports lighting Trester Air Cooled Transformers will reduce the installation costs, the maintenance cost and the current consumption costs.

No oil—no special fireproof vaults—no maintenance or replacement charge—economical in operation—easy to install, conforms to all electrical codes. Single phase, two phase, three phase transformers, 115, 230, 460, and 550 Volts.

Transformers designed for special purposes.

*Representatives desired in principal cities and Industrial centers.*

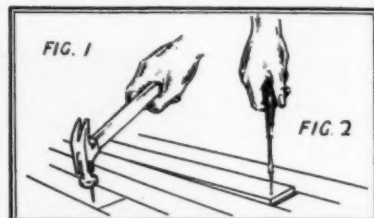
**TRESTER SERVICE ELECTRIC CO.**  
235 E. Ogden Avenue at Market Street, Milwaukee, Wis.  
"Trester Service Since 1908"

## PRACTICAL ME

### Raising Hardwood Flooring

Hardwood floors are durable and lasting as long as they are undisturbed. But when a board must be removed for pulling electrical conductors, much annoying and expensive damage can easily occur due to the difficulty in taking up the board.

S. Dresdner, of New Orleans, La., tells how his men do this job. First,

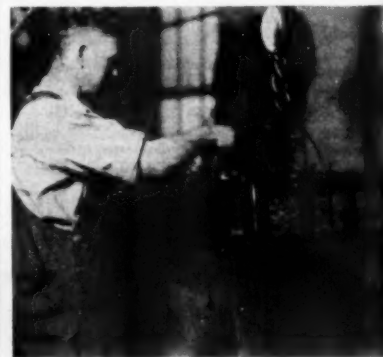


WITH THE NAIL HEAD AS A FULCRUM, THE SCREW RAISES THE BOARD

with a punch or nail-set and hammer, the nail in the board is counter sunk far enough to allow a wood screw to take hold. The wood screw is then driven down on the head of the nail which action slowly raises the board until it can be grasped, or a tool placed under it.

### Cleaning Strap Coils

Considerable time is saved by the repair department of the Charleston Electric Supply Co., Charleston, W. Va., through soaking strap coils in a hot bath of strong cleaning solution. This removes all oil and varnish and



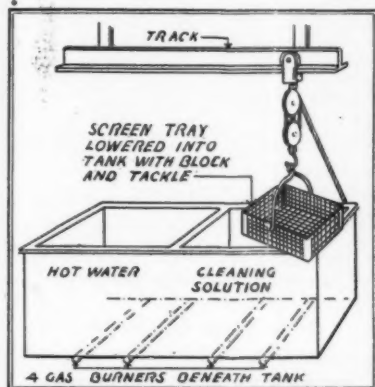
BASKET USED IN HANDLING COILS TO BE CLEANED



## METHODS

allows the coils to be rewound without reforming.

Coils are placed in a screen container and lowered to the bottom of the tank where they remain overnight. Gas burners under the tank keep the liquid hot. In the morning the container is hoisted and slid to the second compartment which contains hot water. After the solution



ARRANGEMENT OF CLEANING SOLUTION AND HOT WATER

has been removed by dipping in hot water the coils are removed and the remaining tape scraped off with a knife. Scraping should be done immediately after the coils have been removed as they will harden again after exposure.

### A Dipping Tank That Saves Labor

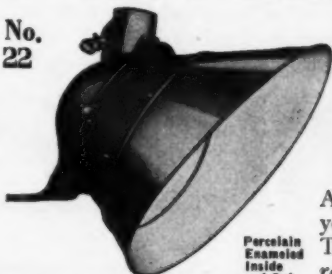
The dipping of motor parts has always been a problem in the shop of the contractor who does a great deal of this work. In many cases the op-



THE TANK IS ON LEGS.

## There's Real Business in FLOODLIGHTING This Year!

No. 22



**HILLITE**  
FLOOD LIGHT PROJECTOR

Porcelain Enameled Inside and Out Open and Closed Types

A big contractor says "It started last year. But you haven't seen anything. This year they are going to play regular golf—tennis—football—all games by floodlight." And HILLITE is sweeping the market!

### Amazing Triumph—Makes Daylight

Hill-Standard features, give proper diffusion—non-glaring—with the farthest reaching efficiency. The scientific perfection of night lighting in absolutely RUST-PROOF, WEATHER-PROOF construction. Porcelain enameled inside and out. The floodlight for Service Stations, Filling Stations, Parking Spaces, Loading Yards as well as all indoor and outdoor sports. "When you buy with confidence you have thought of Hill-Standard." Send for folder in colors and full particulars. Address Division "E."

**HILL-STANDARD Co.**

ESTABLISHED 1900

**ANDERSON INDIANA, U.S.A.**

Largest Manufacturer of Equipment for Water Sports, Parks, Playgrounds and Floodlighting.

## Contractors AND Industrials

Industrials welcome the contractor who can show them how easy they can reduce maintenance costs and increase efficiency with SORGE Air-Cooled Transformers, by supplying 110-volt for lighting, portable tools, and other apparatus, from 220, 440 or 550 volt A.C. power circuits.

Their Air-Cooled feature assures easy and economical installation in any convenient place inside of buildings, or right where the change of voltage is wanted, without enclosures of any kind. No oil. No upkeep.

**SORGE ELECTRIC CO.**  
Clybourn & N. Plankinton, Milwaukee, Wis.

**SORGE**  
AIR-COOLED  
**TRANSFORMERS**



Stock Sizes  $\frac{1}{4}$  to 50 KVA.  
Other sizes built to order

Single Phase  
2-Phase  
3-Phase

Approved by Underwriters

With Conduit Connections

..... use .....  
 ..... the original .....  
**E-Z CONNECTORS**  
 (PORCELAIN)  
**for Quick-Strong-Safe  
 Wire Connections**



TRADE MARK  
 REG.

JOBBER AND DISTRIBUTORS  
 PRICES ON APPLICATION

**WHERE TO BUY  
 "E-Z" Connectors**

Pacific Coast & Mountain States Distributor

**J. M. FELDMAN CO., Inc.**  
 Los Angeles, Calif.

FLORIDA  
 Lighting Fix. Co. (Tampa)

LOUISIANA  
 Lighting Fix. Co. (New Orleans)

MISSOURI  
 Grove Chandelier Co. (St. Louis)

NEW YORK  
 L. A. Woolley, Inc. (Buffalo)  
 City Electric Co. (Syracuse)

PENNSYLVANIA  
 W. Phila. Elec. Sup. Co. (Phila.)  
 Star Electrical Co. (Erie)

TEXAS  
 Beckett Elec. Co. (Dallas)  
 Economy Elec. Sup. Co. (Dallas)  
 A. F. Anderson Co. (Dallas)  
 Economy Elec. Sup. Co. (Fort Worth)  
 Lighting Fix. & Refin. Co. (Houston)

**FOLLOWING TRADE AREAS OPEN FOR  
 EXCLUSIVE DISTRIBUTORS**

New England Trade Area—Maine, N.H., Ver., R.I.,  
 Mass., and Conn.

Middle Atlantic Trade Area—New York, N.J. and  
 Penna.

East North Central Trade Area—Ohio, Ind., Ill.,  
 Mich. & Wis.

**PATENTED OCTOBER 21, 1930**  
 (Other Patents Pending)

APPROVED BY UNDERWRITERS'  
 LABORATORIES: HYDRO-ELECTRO  
 POWER COMMISSION OF ON-  
 TARIO, CANADA; AND RECOM-  
 MENDED BY NATIONAL ELEC-  
 TRIC CODE AND CITY INSPEC-  
 TION DEPARTMENTS.

**FREE SAMPLE—SEND COUPON**

SIERRA PORCELAIN MFG. CO.  
 311 TERMINAL SALES BLDG.  
 747 WARREHOUSE ST.  
 LOS ANGELES, CALIFORNIA

Please send me a sample of your "E-Z"  
 Connector without obligating me in any way.

Name .....

Street & No. ....

City .....

MAY E.C.

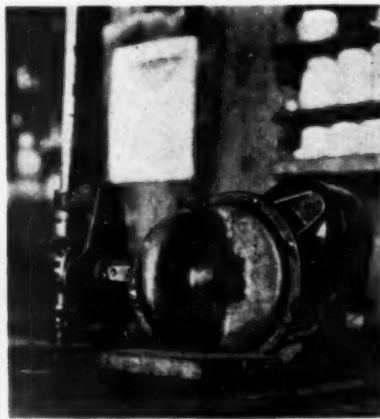
Approved by Under-  
 writers' Laboratories  
 as follows: "E-Z"  
 Solderless splicing  
 device consisting of a  
 glazed, corrugated,  
 porcelain cap with a  
 tapering female  
 thread. For use only  
 in connecting two  
 No. 14 B&S gauge  
 solid conductor  
 wires; also two No.  
 14 solid wires with  
 one or two No. 18  
 B&S gauge, solid  
 or/and stranded con-  
 ductors; also one No.  
 14 and one No. 18  
 solid or stranded  
 wires; also two No.  
 12 and two No. 18  
 B&S gauge solid  
 or/and stranded  
 wires, where such  
 joints are accessible  
 for inspection at all  
 times."

**PRICES**

100 ..... \$ 1.50  
 500 ..... 6.25  
 1,000 ..... 10.75  
 5,000 \$9.50 per M  
 10,000 9.00 per M

eration is difficult because of the posi-  
 tion, size or shape of the tanks.

George Andrae of the Herman  
 Andrae Electrical Company, Milwau-  
 kee, Wisconsin, designed and built a  
 tank which not only makes the dip-



A WASHING MACHINE MOTOR  
 STIRS THE MIXTURE.

ping operation faster and easier for  
 the workmen but through an added  
 piece of mechanism insures a better  
 finish as well.

First the tank was built with legs  
 so that the base of the chain hoist  
 would go under it. This means that  
 when the workman starts to lower  
 the piece of machinery it is directly  
 over the center of the tank.

The other feature was added as a  
 result of the company's experience  
 with the dipping mixture. The body  
 of the compound would sink to the  
 bottom of the tank and constant stir-  
 ring was necessary to keep the mix-  
 ture in the proper state. To get away  
 from all this hard labor, a washing  
 machine motor was installed on top  
 of the tank to operate a set of steel  
 paddles at the lower end of a shaft  
 which runs through the cover into  
 the tank. This outfit has been very  
 satisfactory and the mixture is stirred  
 so efficiently it is only necessary to  
 turn on the motor every few days.

**Anchoring Bolts**

T. E. Lydamore, Westport, N. Y.,  
 uses a practical method of anchoring  
 bolts especially in side walls. It  
 makes a tighter job than pouring  
 lead due to the hot lead contracting  
 and leaving the bolt loose.

A hole is drilled in the concrete  
 so the carriage bolt used will just  
 clear the sides of the hole. Strips  
 of lead are cut about 3/4 in. wide and  
 wound around the end of the bolt

# Always Look Before You Light

That sounds like good ad-  
 vice to a parachute jumper,  
 but it's even better advice to  
 electrical contractors.

The lighting of modern  
 buildings has become an ex-  
 act science as well as a fine  
 art.

In order that the finest  
 possible lighting effects may  
 be secured for any building,  
 we maintain a completely  
 equipped lighting demonstra-  
 tion studio at our factory.

Here—with the hearty co-  
 operation of our corps of ex-  
 perience lighting engineers—  
 a complete program of light-  
 ing effects can be worked out,  
 and Hub equipment specially  
 designed to produce every de-  
 sired lighting effect.

You are cordially invited  
 to make free use of all of our  
 facilities as it fits your con-  
 venience. The complete facili-  
 ties of our capable organiza-  
 tion are yours to command.

Write for your free copy  
 of comprehensive Lighting  
 Handbook just published. We  
 will be glad to send it to you.

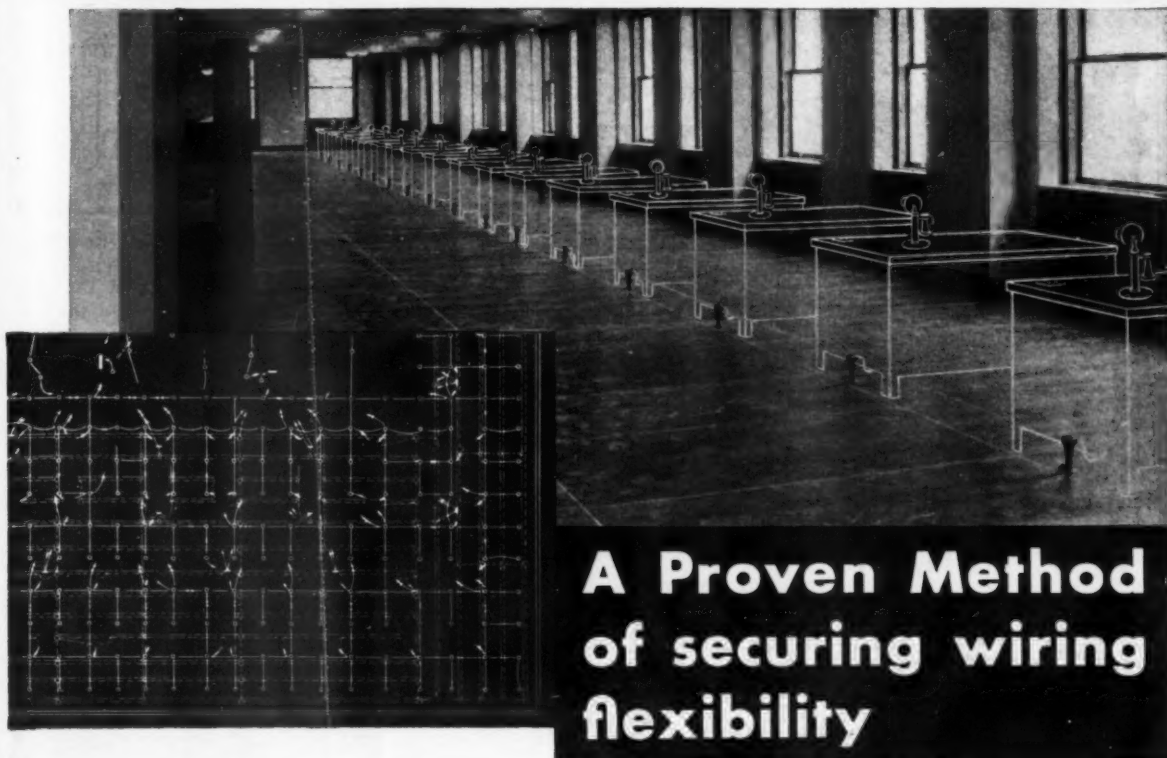
## HUB ELECTRIC COMPANY

Complete Electric Lighting  
 Equipment

Factory and General Offices  
**2219-2225 West Grand Avenue  
 Chicago**

Telephone Seeley 6440-1-2-3

Branch Offices  
 New York Toledo Milwaukee Minneapolis



## A Proven Method of securing wiring flexibility

**S**PECIFIED by leading architects—endorsed by well-known engineers—used in prominent office buildings—recommended by the Telephone Companies—underfloor duct systems provide a proven method of securing wiring flexibility.

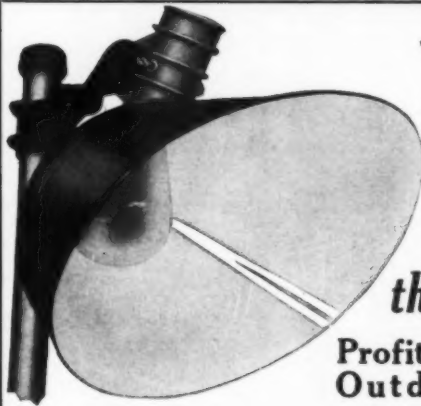
With the duct forming a network of wireways hidden beneath the floor, neat, convenient outlets can be easily tapped as desired. Future outlet changes and additions can be made quickly, efficiently and economically.

For wiring flexibility—specify underfloor duct.



# *Specify* UNDERFLOOR DUCT





The Popular  
**APOLLO**  
Porcelain Enamel  
Adjustable Socket  
**FLOODLIGHT**

THE BEST VALUE ON  
THE MARKET FOR THE  
MONEY  
LIST **\$39.50**

**AMERICAN APPLIANCE CO., INC.**  
(Div. American Signs Corp.)  
**KALAMAZOO, MICHIGAN**

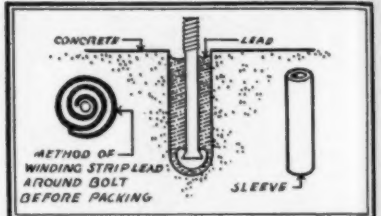
# THIS YEAR

..... *more*  
*than ever before*

## Profits will be greater in Outdoor Floodlighting

The demand exists *right now* and in *your own locality* for efficient illumination of gas stations—barbecues—bathing beaches—tennis courts—miniature golf courses—sports fields and amusement parks.

**We Have a Plan** that will show you where and how to get this business *now*. Write for a copy of "A Floodlighting Sales Plan."



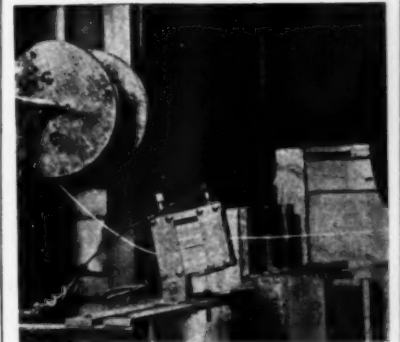
### METHOD OF ANCHORING BOLTS

so that the lead will fill the hole. The bolt is pushed in and the lead pounded down with a sleeve as illustrated. This process is repeated until the hole is full.

The size of the sleeve depends on size of bolt used.

### Tension Device for Coil Winder

In feeding wire to coil winding machines in the shop of the Penn Electrical Engineering Co., Scranton, Pa., to avoid kinking, the wire is passed through a tension device. The

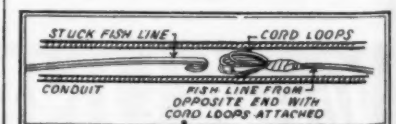


A TENSION DEVICE THAT ELIMINATES KINKING OF WIRE FED TO COIL WINDING MACHINE.

device consists of numerous blocks of wood held in a frame and pressed together with set screws. The wire is passed between two of the blocks as illustrated, and the tension adjusted by the screws.

### Removing Stuck Fish Line

When the fish line sticks it not only causes a lot of annoyance but frequently a lot of labor is lost in extracting it. Meek Collins Co. at



LOOPS CATCH IN STUCK LINE

# THEY ARE BOTH GOOD

And have been for more  
than a Quarter of a Century

"GALVADUCT" and "LORICATED" Rigid Steel Conduits are easier to work with on the job. Smooth glass-like interior surfaces . . . plus clean, sharp threads go a long way toward cutting costs. In these days that's mighty important. Try them.



**Garland Mfg. Co.**  
Pittsburgh - - - Penna.

## Brand New...

### A WALL TYPE CIRCULATING AIR HEATER



The Circulat-Aire Electric Heater

**A**N additional source of profit for you in every new building . . . and old ones too. Lists \$17.50 Complete.

Electric heat IN ACTION . . . the Circulat-Aire provides healthful, instantaneous, CIRCULATED hot air for the bathroom — bedroom — sun room — nursery — kitchen — or office. Five times as efficient as a radiant type heater. Heats every corner—not just one spot. Furnished in four attractive colors. Built into the wall—out of the way. Genuine porcelain enamel face. Safe. Easy to install. Guaranteed for one year.

Act now! The building season is here. Let the Circulat-Aire increase your profits in 1931. Made by the makers of the well known Apollo Floodlight.

A Product of

**American Appliance Co.**  
(Division of American Signs Corp.)  
Kalamazoo, Michigan

#### WRITE—WRITE—WRITE

To  
American Appliance Co., Inc.  
Heater Department  
Kalamazoo, Michigan

Send us complete information and particulars regarding special introductory offer on the Circulat-Aire.

Name .....  
Address .....  
City ..... State.....  
Jobber's Name .....  
Address .....

Norfolk, Va., uses a second line and starts it at the opposite end of the pipe when the first becomes stuck. A heavy cord is looped at the end of the second line and friction tape is wound around the end to make it stay in place.

This line is forced into the pipe

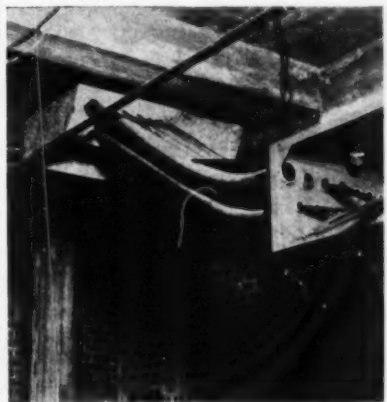


#### CORD IS TAPED TO FISH LINE

until it meets the first. Then it is slowly twisted. Some of the many cord loops are sure to catch the hook in the first line. The ordinary method of trying to catch one hook with another is uncertain and takes a great deal of time.

#### Angle Pull Boxes Save Bends

Pull boxes are used extensively to eliminate bends where a number of large conduits are run close together and in parallel. However, Frank



CONDUITS DROP DIRECTLY OUT OF THE ANGLE SIDED PULL BOX.



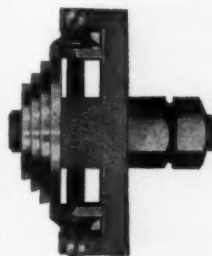
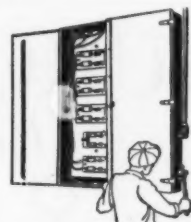
Enlarging a knockout for a 3/4-inch conduit in an outlet box.

## No More Effort to Enlarge Knockouts



If you are one of the contractors who hasn't yet used Greenlee Knockout Tools, you are really missing something. Not only do these tools eliminate all tedious labor when enlarging knockouts, but they leave a hole that is clean and round. No more worry of drilling enlargements and the hard work of reaming and filing afterwards. These tools handle the job with an ease that will surprise you. Best of all, however, is the money they save. Knockouts that formerly took an hour to enlarge are now completed in a minute and a half or less. The No. 735 Knockout Punch, shown above, is built in sets for 1/2, 3/4, 1 and 1 1/4-inch conduit. No. 737 is for 1 1/2 and 2-inch conduit. Operation is simple and requires only a common wrench.

Cutting a 3-inch conduit hole in a 200 horse-power cabinet while the current is on.



The Knockout Cutter, shown to the left, operates just as easily and enlarges holes just as quickly as the Knockout Punch. It will enlarge holes to fit 1 1/2, 2, 2 1/2 and 3-inch conduit.

**GREENLEE TOOL CO.**  
Rockford, Ill.

Please send complete information on your Knockout Tools.

Firm.....

Name.....

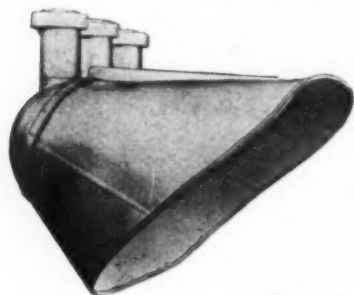
Street.....

City.....

Name of Jobber.....

5-31

# FLOODLIGHTING



by  
**FASNACHT**

means the most efficient illumination, free from glare and dark areas.

Now is the time to consider all outdoor floodlighting. Baseball and Football Fields, Tennis Courts, Race Tracks, and other sports areas are all your prospects. Write for quotations now.

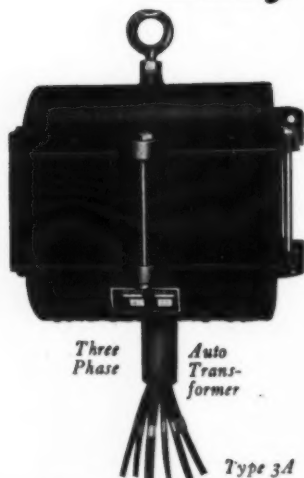
*Send in your Problems—Our Engineering Department offers service without cost or obligation.*

Fasnacht is a pioneer in the field of open-type floodlighting and has a full line of open-type and closed-type units. There is a difference in floodlights.

**IRA E. FASNACHT, Inc.**  
EPHRATA » » » PENNA.

## SURGES Transformers

AIR-COOLED  
*Easy to Install*



We maintain a staff of transformer experts to help you. Consult them (without charge) anytime.

### Your Customers Prefer Them for Their Economy of Operation

Surges Air-cooled Transformers are ideal for lighting installations. They meet the requirements of the National Board of Fire Underwriters for indoor installation and do not require fireproof vaults.

Every contractor should learn more about the opportunity SURGES AIR-COOLED TRANSFORMERS offer for increased sales to industrial customers. Practically every industrial plant and large building is a prospect. **WRITE TODAY FOR MORE INFORMATION.**

**SURGES ELECTRIC COMPANY**  
MILWAUKEE, WIS.

*Special Air-Cooled Transformers to fill specific needs. Send us your requirements.*

Hurd of the Hurd Electric Co., Minneapolis, Minn. has gone a step further in the use of pull boxes.

He recently had a large job in which a group of conduits coming into a switchboard room were re-

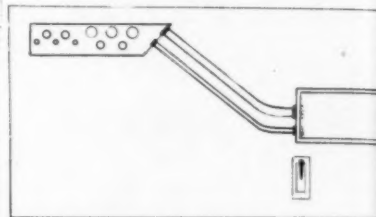


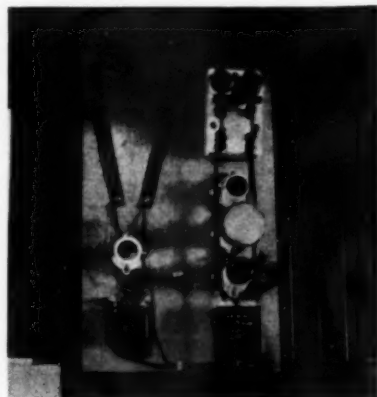
DIAGRAM OF CONSTRUCTION OF PULL BOX.

quired to make a right angle bend and then drop to a lower level.

A pull box saved the right angle bends and then by forming the side of the box at an angle as shown in the accompanying illustration, the bends dropping to the lower level were also eliminated.

### Simple Test Board

An easily constructed fuse and lamp testing board is used by the Frank L. Ham Co., Worcester, Mass. Copper strips opposite polarity are mounted on a board in a spread V-shape to accommodate all sizes of standard cartridge fuses. The strips are connected to a bell-ringing transformer through a buzzer. If the fuse is good a buzzer at the bottom of the board rings when contact is made. The lamp tester consists of a pony cleat receptacle in which the thread inside the socket is split so that the lamp to be tested may be pressed instantly to the bottom of the socket without screwing. Another socket is connected in series with a lamp for use in testing.



SIMPLE TESTING BOARD



**FIRST**

... When distribution methods were being developed, usually the industrial buyer found it desirable to carry sizable stocks of materials and supplies.

**THEN**

... Came the electrical supply jobber ... and, during the years he was perfecting his service, the buyer often found his inventory long on some items and short on others.

**NOW**

... Users of electrical materials and supplies may carry minimum investments with economy but without risk ... for the General Electric Supply Corporation maintains ample stocks in more than 80 wholesale warehouses, strategically located throughout the United States.




*You can obtain prompt delivery of everything electrical from a General Electric Supply Corporation warehouse near you.*

---

**GENERAL  ELECTRIC**  
**SUPPLY CORPORATION**

---

NO SOLDER NO TAPE



APPROVED BY UNDERWRITERS

### SALES SECURITY

Notice the spiral spring insert imbedded in the moulded material of the Ideal Connector. This spiral spring insert threads itself onto the copper conductors and acts as a current carrying sleeve. It holds the conductors with a vise-like grip. You can use Ideals on all your wiring jobs.

U. S. Patent No. 1,700,985. Infringements will be vigorously prosecuted.


## IDEAL WIRE CONNECTORS

IDEAL COMMUTATOR DRESSER CO.,  
1041 Park Avenue Sycamore, Illinois

### FREE SAMPLE

5/31  
IDEAL COMMUTATOR DRESSER CO.,  
1041 Park Ave., Sycamore, Illinois  
I would like to try Ideal Connectors and ask that you send free samples.

Name.....  
Firm Name.....  
Address.....  
City.....  
My Jobber Is.....  
City.....




## A ROLL O' TAPE

*Electrical flash-  
es gathered  
among the Big  
Wire-and-Pipe  
Men by*

Coit A. (Duke) Smith  
and Walter Holmes  
Field Editors, ELECTRICAL CONTRACTING

**W**OMEN love to have the furniture moved about occasionally. Up to now the lord and master of the house would move everything but the radio and chuckle softly to himself because it had to stay by the outlet. But alas, the Durham Harbin Electric Co., Greenville, S. C., has found a way to destroy this last barrier of male content. They are intensively selling the idea of several radio outlets in every home; including kitchen, bedroom, and living room. A heavy duty receptacle plug for electric ranges is another one of their selling suggestions. By pulling out the plug one can easily move the range to facilitate cleaning or painting. Removing the plug also provides an additional safety feature in case the family are all temporarily away.

**T**HE Crymble Electric Co., Bristol, Va., received a service call from an industrial plant to make minor repairs on the intercommunicating telephone system. While there the wireman was asked to fix a light. This led to an inspection of the lighting system. Result: complete rewiring job. It isn't how good business is, it's how good you can make it that counts.

**I**T'S a poor month when they don't pin some kind of an organization job on our friend Jos. R. Downs, who specializes in power work in Peoria, Ill. The latest is his election to the office of secretary in the reorganized Peoria Electric Club, which includes all branches of the electrical industry in that city.

**F**ROM Kansas City, to Salt Lake City, to Portland, Ore., has been the itinerary of A. E. McCoy of the McCoy Electric Co., over a period of 30 years in the electrical contracting business. A. E. says that eight or ten years ago when flexible conduit was just getting in, everybody around Portland said that it could not be used and was against the local code. This

**YES! YOU CAN  
MAKE MONEY  
NOW**



**WIREMOLD**  
for SURFACE WIRING

**HOW?**

**SELLING  
LIGHT BY THE**

**ROOMFULL!**

Current issue of Wiremold's famous Business Builder, "The Wiremold Idea," tells how to sell light by the **SHOP FULL—STORE FULL—OFFICE FULL—ROOM FULL.** Be sure to get your free copy.

**WIREMOLD**

WBB HEADQUARTERS  
HARTFORD, CONNECTICUT

**Results Count  
AND**



**S.R.K.**  
Patented

**Wire Connectors  
Assures Them »**

The best results are obtained with S.R.K. WIRE CONNECTORS. Using S.R.K.'s is the up-to-date method of making connections. No more solder and tape to fuss with.

For speed, safety, reliability and efficiency you can find nothing to beat S. R. K. WIRE CONNECTORS.

Approved by  
Underwriters Laboratories      Factory Mutual Laboratories

**JIFFY WIRE CONNECTOR CO.**  
HACKENSACK, N. J.

General Sales Office  
C. DENN MONTGOMERY, Jr.  
458 Broadway, New York City  
Phone Canal 6-7533 and 6-6186

made him curious and he studied the local code diligently and could find nothing that seemed to prohibit it. So he got hold of some flexible and put it in on a couple of jobs. When the city inspector came around he went up in the air and said that it was out of the question and to take it out. But A. E. got him quieted down and he promised to go back and study the code himself, which he did, with the result that the work was passed. Of course since then Portland has become a rigid conduit city except for 1 and 2 family dwellings, but A. E. by knowing his code really started something for flexible was widely used in its day there.

**ROBERT MERCER** of the Albin Gustafson Co., New York, may his tribe increase, is one of those foremen who leave a note on the electrician's shanty telling where they may be found. People who want to see him do not have to depend on well meaning persons who advise that "You will find him on the fifth, or tenth floor, or maybe in the basement."

**F. L. SIGLER**, Mobile, Ala., has a good slant on practising economies which pay nice dividends in the financial end of the business. He names two things, which, in lean times, may actually mean the difference between red and black ink at the end of the year. One is the discounting of every bill by the contractor. The other is carrying his own paper when selling on time payments. This not only puts in his own pocket the "velvet" that otherwise goes to a finance company, but keeps the customers coming into the store and promotes a much closer acquaintance.

**UP** in Excelsior, Minn., they are welcoming a newcomer in the contracting line. He is Arthur L. Bower, who recently bought out the Excelsior Electric Co. Mr. Bower is not making radical changes in the character of the business, except to plan for a big year in 1931.

**JACK CHOVIN**, an electrical contractor of Anchorage, Alaska, proudly displays a new watch with an engraved presentation from Ford's railroad to the effect that it was the first watch ever given away by the railroad, etc. Jack Chovin was brought up as a boy on a farm adjoining Henry Ford's place, and says that he put Henry on his back many a time. He decided to go back there a short time ago and visited Henry. While having lunch with a group of Ford executives, he bet Henry that he could still beat him in a foot-race, and was taken up. They stripped off their coats in front of the place and started to run. About halfway, Jack's knees gave out and he fell flat, breaking his old watch and tear-



## The New KEYSTONE FLOODLIGHT

for  
Outdoor Sport and  
Entertainment Areas

Write for  
Circular No. 314

A New popular priced floodlight  
for the illumination of

Golf Courses  
Swimming Pools  
Tennis Courts  
Amusement Parks  
Athletic Fields  
Gas Stations  
Parking Areas  
Skating Rinks, etc., etc.

Made by the manufacturers of  
the famous Golden Glow Pro-  
jectors.

Manufactured by

**ELECTRIC SERVICE  
SUPPLIES CO.**

MANUFACTURERS

Railway-Power-Industrial-Electrical Material

Home office 17th and Cambria St., PHILA-  
DELPHIA; District offices at 111 N. Canal St.,  
CHICAGO; 50 Church St., NEW YORK; Bes-  
semer Bldg., Pittsburgh; 88 Broad St., Boston;  
General Motors Bldg., Detroit; Canadian  
Agents, Lyman Tube and Supply Company,  
Ltd.



(Above)  
Single Bolt Hole Heavy Pipe  
Clamp No. 830. (Fewer pipe  
clamps are needed to install,  
and the conduit is better sup-  
ported—a decided saving in  
time and trouble—especially on  
long runs.)

(Below)  
High-Insulation Threaded  
Composition Bushings and Lock  
Nut. For Entrance, Cut-Out  
and Panel Boxes. (Won't de-  
teriorate in use, nor break or  
strip when installing.)



## ADAPT

Trouble-Saving  
Specialties

(Just a few, out of  
Many in Stock)



Self-Aligning Outlet Cover. No.  
54-62. swings freely in any  
direction, but cannot revolve and  
twist wires. (Pendants always  
hang vertical, and swing aside if  
accidentally struck.)

If You Need Any  
"Special" Fittings  
Write Us to Quote



(Above)  
Self-Aligning Fixture Joint  
made on same principle as  
self-aligning cover shown in  
illustration at center. No.  
1000.

(Below)  
Adapt-Safe Reducing  
Bushing. (A combination  
Lock Nut and Reducer Bush-  
ing which makes 1/2" conduit  
fit snugly into 3/4" knockout  
holes without need for extra  
reducer bushing.)



## The ADAPT Co.

2996 East 72nd St., Cleveland, O.

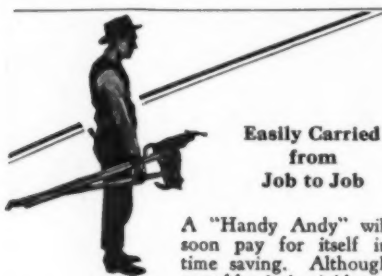
NEW YORK CITY  
A. Stokes, 112 East 23rd St.

BOSTON, MASS.  
James H. Healey Co., 120 Pearl St.

CHICAGO, ILL.  
United Electric Sales Co., 300 W. Adams St.

PHILADELPHIA, PA.  
Craven Electric Sales Co., 30 Bank St.





Easily Carried  
from  
Job to Job

When Folded  
Will Pass  
Through 16"  
Opening



A "Handy Andy" will soon pay for itself in time saving. Although portable, it is rigid and staunch as a stationary Vise Stand. Made of malleable steel. No loose parts to be dropped or lost. Holds standard hinged or chain vises—no drilling necessary. Order from your jobber. Accept no substitutes.

Height 36 inches  
Weight 32 lbs.

Bending Capacity  
 $\frac{1}{4}$  inch pipe

**"HANDY-ANDY"**  
VISE STAND  
WESTERN WIRE PRODUCTS CO.  
3rd and Spruce Sts.  
ST. LOUIS, MO. U. S. A.

## OUTDOOR LIGHTING TRANSFORMERS



Standard, Self-cooled, transformers have a large market in the sports-lighting field. For golf courses, swimming pools, athletic fields, tennis courts and other outside installations, there is a STANDARD transformer to fulfill your every requirement.

Standardize [with] 1

**Standard**

CLIP AND MAIL

The STANDARD TRANSFORMER CO.  
WARREN, OHIO

Gentlemen: Kindly send me bulletins describing and illustrating your complete line of "Standard" Transformers.

Name .....  
Address .....  
City ..... State .....

ing the knees of his pants. With great presence of mind, however, he got up and shouted: "No fair, you tripped me." Henry came back, took the watch, sat down on the sidewalk and in two minutes had it entirely apart, remarking: "This watch is no good. I will take you down to the office and get you another," which is the answer to the engraved watch.

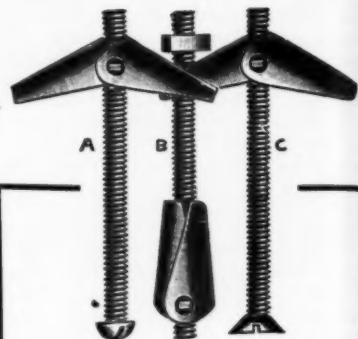
VIC CAMPBELL, New Orleans, La., specializes in commercial and industrial remodeling, and runs into some funny ones in both wiring and lighting. For instance, he was called out to a store fixture factory which had a 220 volt, d.c. plant. They had been experiencing plenty of trouble, not the least of which was that only 180 volts of the 220 was reaching those points where it was needed most. Vic saw that patchwork would be worse than nothing, but instead of passing up the job, put on his selling clothes and put over a complete change to a.c.

THE Whiffen Electric Co., White Plains, N. Y., is doing the wiring on the new shoe shop at Sing Sing Penitentiary. The inmates favorite game is hide-and-go-seek and to make the game more difficult there are no wall switches on the light circuits. All lights are controlled from panels out of reach of the prisoners.

IT seems to be the custom for contractors in the southeast to give their customers useful advertising novelties. R. S. Osborne, Norfolk, Va., has a light ruler that he offers to the customer in place of the customary visiting card and an advertising blotter is sent with each letter mailed by his firm. R. H. Bouligny, Charlotte, N. C., gives an electric cigar lighter to his customers so that his name will always be on the desks of engineers and industrial plant executives.

SOME day I'm going to compile a list of globe-trotting electrical contractors, and I'll bet it will be an imposing one. I met A. J. Dunbar, St. Louis electrician, in New Orleans, and learned that he and Mrs. Dunbar were headed for Mexico City, with Vera Cruz, Havana, Miami, etc., to follow. Andy is a veteran in St. Louis, and has developed a nice specialty in theatre installations and additions.

C. S. DYER, Ball and Dyer Electric Co., Birmingham, Ala., lists his firm as industrial and commercial specialists with a long list of major installations to verify the classification. However, this has not prevented him from hanging up an enviable record in another class of work. This record consists of the firm's wiring a total of 14 schools in just five years' time.



## GROWING IN POPULARITY WITH THE TRADE

for attaching any object to hollow  
walls or ceilings

## PAINE SPRING TOGGLES

Simplest and Quickest in operation  
Any size — Any style head — Any  
finish

Send for free samples  
For sale by your jobber

THE PAINE COMPANY  
2945 Carroll Ave., Chicago, Ill.  
79 Barclay St., New York, N. Y.

**Lowest  
Prices**  
on NATIONALLY  
ADVERTISED RADIO  
and ELECTRICAL  
GOODS

Get it it's

**Paramount Salesman**

**LIGHTING  
FIXTURES  
ELECTRICAL  
CONSTRUCTION  
MATERIAL**  
APPLIANCES  
RADIO SETS  
AND SUPPLIES  
WHOLESALE ONLY

**FREE!**

Write for  
this Book

**PARAMOUNT**  
ELECTRICAL SUPPLY COMPANY  
(WHOLESALE ONLY)  
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ers.  
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stall  
equa  
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(Continued from page 21)

properly balanced on the transformers. If night golf becomes popular, the courses which are to be lighted will undoubtedly be modified to accommodate the most economical installation. All other things being equal, the cost of equipment for good installations does not vary a great deal. Wood poles may be substituted for steel towers, and the cost will be less, but the saving does not warrant the sacrifice in appearance and ease of maintenance.

There will be some variation in the selling price of jobs, due to local requirements. Some of the tables shown herein have an item for transformers, which may be furnished by the local utility company. There is also an item for removing and replacing turf. In the case of new fields there would be no turf, and the cost of trenching might also be reduced.

The towers figured include a basket and supports for twenty-four projectors which can be placed six on a side. In most cases the position of the tower is such that only two or three of the sides can be utilized. Having large groups of reflectors, not



**CONTRACTOR ELECTED VICE-PRESIDENT OF YOUNGSTOWN LEAGUE:** Carl Peterson, an electrical contractor for 18 years in Youngstown, has been elected vice-president of the Electrical League of Youngstown, Ohio. Other officers elected are W. I. Moore, president, and E. J. Beil, executive manager. In addition to Mr. Peterson's activities in the league, he is secretary and member of the executive committee of the local Electrical Contractors Association.

*New*

**24/36 Wavy Set**

**MILFLEX**

**DUPLEX**

PATENTED U.S.A.

*Electricians*

*Special*

**HACK SAW**

**BLADES**

MILFLEX  
DUPLEX  
PAT. U.S.A.

LARGE TEETH FOR CUTTING A SMALL TEETH FOR STARTING

### *Starts the Cut at Any Angle Finishes the Cut Cleanly*

The fine tooth section of the DUPLEX starts the cut on the first stroke, and cuts in a clean straight line AT ANY ANGLE. Thus a full stroke can be started at once. By using the fine teeth again on the last few strokes, the tearing of material is eliminated.

The DUPLEX also makes it a simple matter to "spot" the cut, just as a prick punch spots the position of a hole before drilling. You can start the cut at the exact mark, without slipping or marring the work.

For metal cutting efficiency—far beyond your expectations—demand the Electricians Special MIL FLEX DUPLEX Blade.

Made in 24/36-pitch wavy set. Also 14/28 and 18/36 pitch straight set. The fine teeth start the cut like the feed screw of an auger bit.

*Ask Your Dealer or Jobber*

**Demand**

**MILFLEX**

**DUPLEX**

PATENTED U.S.A.

**The HENRY G. THOMPSON & SON CO.**

Established 1876

New Haven, Conn., U. S. A.

## Carries Conduit at Any Angle to Beam

PROBLEMS of securely carrying conduit across beams, parallel or at various angles to them need bother you no longer. Here is a hanger designed to solve your troubles.



## The Most Practical and Widely Adaptable Hanger for Open Steel Construction



TYPE "F"  
Conduit  
Hanger

The foot portion of this hanger provides a circular plane of radiating ridges which are slightly hollowed at the center. This causes the ridges which carry the pipe to grip it at four separate points, giving, with the set screw above, a five-point gripping force. This provides the finished construction with a strength several times greater than other hangers designed to perform a similar duty.

**Send for Bulletin EC-31**  
**The Efficiency Electric & Mfg. Co.**  
East Palestine, Ohio



**WIRED NEW ASSOCIATION CANADO-AMERICAINE BUILDING:** W. Gagne of the Star Electric & Radio Shop, Manchester, N. H., is shown here as he finished the electrical work on the new Association Canado-Americaine Building in Manchester. This is just one of many large jobs Star Electric & Radio Shop do yearly.

only saves on the number of towers, but the unit cost of installing the equipment on the towers.

Installing conduit on tower frames is costly, and the expense of rigging up to hoist equipment to the baskets also runs high. The cost of these items like all others will be affected by the equipment and experience of the individual contractor.

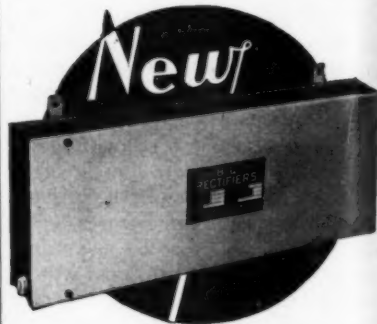
No set of units for estimating can be set up to apply for all contractors and all jobs. Each contractor must establish his own costs on certain jobs and use them as a gauge for similar ones.

Although the present depression temporarily retards the progress of this new line of electrical construction; the demand for night athletics will eventually force owners to see its commercial value. In the meantime it behooves the contractor to get himself acquainted with construction methods and costs.

### Active in Ordinance Work

The Fort Wayne (Ind.) Electrical Club has been instrumental in bringing the building code up-to-date and having incorporated in its ordinance an examination clause for all electrical contractors in order to receive a license. Various committees have been appointed to carry on this work.

In addition to a membership of electrical contractors, the local job-



## Construction on B-L Rectifier Assemblies

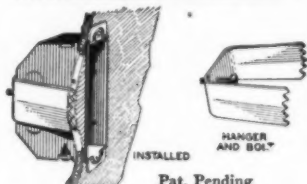
The B-L Assemblies illustrated above are now housed in steel cabinets of new design, with added features . . . Cabinets are of heavy gauge steel with aluminum finished covers held in position by 4 screws . . . Mounting lugs conveniently located for easy installation . . . Porcelain bushings for intake and output . . . Ample ventilation on 4 sides.

This type of cabinet construction lowers production costs and enables us to quote reduced prices and added discounts to jobbers and contractors. Wherever low-voltage direct-current is necessary, B-L Rectifiers will do the job quietly, efficiently, and usually at a lower cost. They are ideal for replacing storage batteries and furnish dependable rectified current for the operation of electric time clocks, signal systems, etc. Literature explaining their many uses and applications will be sent upon request.

## The B-L Electric Mfg. Co.

Dept. C  
ST. LOUIS, MO., U. S. A.

## MID-WEST Old Work Hanger for Installing Switch Boxes in Wall Board



Pat. Pending

Approved by Underwriters Laboratories  
A simple and positive device for quickly installing Switch Boxes in Wall Board, and similar board, in houses already wired.

Gives an Extra Sturdy installation.

The hanger is made of Terne Plate, rust-resisting steel with special Udylytized bolt.

**MID-WEST METAL PRODUCTS CO.**  
Muncie, Indiana

### Clip and Mail this Coupon

Mid-West Metal Products Co., Muncie, Ind. Gentlemen:

Please send me Free Sample of your Old Work Hanger for Installing Switch Boxes in Wall Board.

Name.....  
Street.....  
City.....State.....

## ARMSTRONG BROS. PIPE VISE SADDLE

New

A new attachable base, complete with pipe bender, for hinged, chain or open side pipe vises that serves as bench or tripod, that can be carried to the job.



Fastens instantly and securely on round or square posts (Round, 3" to 6" diameters—Square, 4" to 6"). Held rigid by strong flat-link chain. Made of Certified Malleable Iron. Takes all standard make vises of the following numbers: Hinged—7000, 700, 70 and 71; Chain Vises—1 and 2; and corresponding Open Side Vises.

WRITE for Circular

**Armstrong Bros. Tool Co.**

"The Tool Holder People"

341 N. Francisco Avenue, Chicago, U.S.A.



# The CHICAGO

is the  
Quickest Way  
To Hang All Conduit!

With the Chicago Conduit Hanger you make 2 operations—

1. Drill Hole
2. Put conduit in place and drive hanger in with fluted punch.

In addition to ease of installation these hangers

1. Cost less
2. Take less drilling in brick or concrete
3. Take less labor to install
4. Have no protruding bolts or nuts

Your next job and every job will be easier and net you more money if you use Chicago Conduit Hangers, and other Chicago products which include Expansion Bolts, Expansion Screw Anchors, etc.



Free  
Samples  
Will Be  
Sent You

The Chicago Expansion Bolt Co.  
126 S. Clinton St. Chicago, Ill.



## A BIG MONEY SAVER

Eliminates triple handling—unwinding—measuring and rewinding wire, thus saving time and money. Manually operated—reels wire into neat coil, automatically counting and registering number of feet. Strongly built of heavy selected materials so as to last a lifetime.

*It Pays for Itself*

Send for bulletin.  
Write us or your jobber.

Minneapolis Electric  
and Construction Co.

88 S. 13th St.

Minneapolis

Minneapolis

bers and the electrical inspector are associate members.

The 1931 officers are Vern Pifer, president; Louis Gerke, vice-presi-



Left to right: Louis Gerke, vice-president; Vern Pifer, president, and Ed. Ashton, secretary.

dent, and Ed. Ashton, secretary. Arthur H. Welkin is chairman of committee on educational activities.

### New York Contractors and Dealers Plan Convention

The New York State Association of Electrical Contractors and Dealers will hold its annual summer convention at Higby Camp, Big Moose, New York, on June 15, 16, 17, 18 and 19.

No definite plans have been made as yet, but tentatively it is planned to convene only in the mornings and leave the afternoons and evenings for pleasure. In other words, a convention and vacation combined.



**RESIGNS AS MANAGER OF DES MOINES ELECTRAGISTS:** F. J. Moeckly has resigned as manager of the Des Moines (Iowa) Chapter of Electragists, and will go into business for himself. Mr. Moeckly will retain offices at 311 S & L Building, Des Moines, the former location of the chapter offices.



### Let MULTI Help You Get Sports Lighting BUSINESS

The Advanced designs, substantial construction and attractive prices of the Multi Line will help you get more than your share of this profitable business.



Here is one of "Multi's" open wire cross-arm hangers for miniature Golf Courses, Auto Sales Yards and General Overhead Wiring. It will pay you to have complete information on our entire line.

**MULTI ELECTRICAL MFG. CO.**  
1840 W. 14th St. Chicago, Ill.

Tear out this Ad and attach to Your Letter-head • We Will Send You Full Data on the Multi Line

## Golf Courses!



### Get Prices on JACKSON REFLECTOR

**TOMORROW** you may have to figure on a Golf Course reflector job. Chances of getting it will be greatly increased if you use JACKSON prices. But you won't be able to do it without our price list. Send for it today.

Jackson Electrical Company,  
910 W. Van Buren St., Chicago

Gentlemen: Please send at once price list of JACKSON Standard quality low price reflectors.

Name.....

Address.....

City.....State.....

# Manufacturers News

*A department for the announcement of activities of manufacturers that are of interest to contractors, such as changes in executive personnel, branch offices, new products, etc.*

## Interstate Association Defines Purposes

The Interstate Electrical Manufacturers' Association, Inc., New York City, composed of electrical manufacturers, branch office managers and manufacturers' agents in the New York metropolitan area, met recently to discuss the purposes of the association.

The association is to procure and diffuse among its members accurate and reliable information as to the standing and character of the persons, firms and corporations with which the members are doing or propose to do business; to promote uniformity and certainty in the customs and usages of the business conducted by its members; to protect its members from dishonest and irresponsible customers; to co-operatively handle credit problems common to or arising in the electrical business, and to exchange ideas and policies relating to the efficient conduct of the electrical business.

The officers of this newly formed association are Willard G. Ward, president; Albert S. DeVeau, first vice-president; Thomas W. Kirkman, second vice-president; Joseph J. Loeffler, treasurer and Ralph M. Cohen, secretary. The board of governors consist of Ralph M. Cohen; William A. Treadwell; Walter B. Osterman; Thomas W. Kirkman; Willard G. Ward; Joseph J. Loeffler; Hamilton H. Roberts and Albert S. DeVeau.

## C. S. Knight, Jr.

Charles Sanford Knight, Jr., sales manager of electrical and wire rope of the American Steel & Wire Co., Chicago, died on March 11.

He was born in Worcester, Mass., June 15, 1864, and entered the employ of the Washburn-Moen Mfg. Co., Worcester, at the age of 14 years. Mr. Knight steadily advanced

from his first position of weigher and timekeeper to the position of sales managership of electrical wires and wire rope of the American Steel & Wire Co., successors of the Washburn-Moen Co., which he held at the time of his death.

## Cable Grip Companies Merge

Announcement has recently been made of the purchase of the Universal Cable Grip Co., Skaneateles, New York, by Kellems Products Inc., 6 Varick Street, New York City. The unique feature of this



Miss Vivien Kellems, President Kellems Products Inc.

transaction is the fact that both of these companies were owned and operated by women.

The Universal Cable Grip Co. is the old pioneer cable grip manufacturing firm of the industry. It was established a quarter of a century ago and for the last five years has been conducted by Mrs. Olive D. Wood who acquired the business at the death of her husband, the late George W. Wood. Kellems Products Inc. was incorporated three years ago by Miss Vivien

Kellems, president and owner of the company, to manufacture a new type cable grip for lead-covered cable and more recently the line of Kellems Junior Grips, small cable grips for pulling rubber-covered wire in branch circuits.

The Universal factory at Skaneateles has been closed and steps are being taken to consolidate the two companies under the name of Kellems Products Inc. with the main factory at New York City.

## Turner Brass Announces 60th Anniversary Drive

W. M. McAllister, president of The Turner Brass Works, Sycamore, Ill., announces a sales drive commemorating its 60th anniversary. Turner Brass has been manufacturing and developing blow torches and fire pots since 1871.

## Floodlighting Sales Manual

A loose-leaf sales manual on floodlighting has been issued by the American Appliance Co., Kalamazoo, Mich. The manual gives complete specifications and characteristics of Apollo and Jumbo floodlights and presents a comprehensive sales plan showing new opportunities for profits and where and how floodlighting units can be sold. Numerous testimonial letters and photographs are included.

A large section of the manual is devoted to the layout and design of outdoor floodlighting. Diagrams and specifications are given for gas stations, service stations, barbecue stands, miniature golf courses, parking grounds, swimming pools, tennis courts, handball courts, golf driving courses, football fields, baseball fields and similar applications. In some instances where various intensities are required, layouts are given for each intensity.

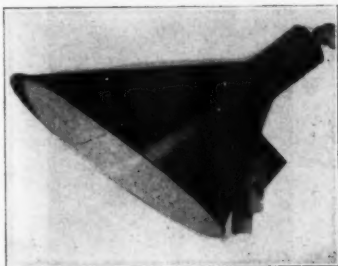
## New Electrical Products



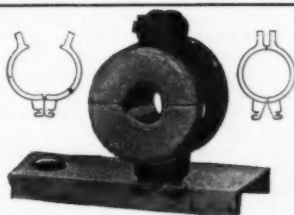
A flexible armored weatherproof cable, which structurally is a combination of several features of Trenchlay (non-metallic sheathed underground cable), Parkway and aerial cables, is announced by General Cable Corp., New York City. Three rubber-covered and braided wires (No. 6 or No. 4 A.W.C.) are cabled and sealed against moisture by an asbestos base caulk. A braid over all three conductors is saturated with special compound. An interlocking galvanized steel tape armor is then applied with a second treatment of caulk. The final braid is treated with weatherproof compound and complete cable is finished in Romoxide, a sun-ray resistant compound. This cable is designed to take the place of individual wires and rigid conduit formerly used from point of attachment of the aerial conductors on the building to the service entrance switch. Cable is flexible and easily bent.



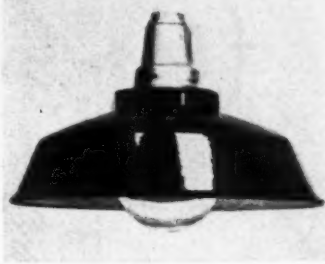
Benjamin Electric Mfg. Co., Des Plaines, Ill., announces a play area floodlight, No. 5752, providing uniform and strong illumination on ground and to front and sides of unit. It is an open type unit, wide angle diffusing floodlight with reflecting surface of diffusing porcelain enamel in combination with an inner reflector of oxidized aluminum.



Jackson Electric Co., Chicago, is now marketing an open type floodlight with weatherproof socket housing, and adjustable socket. Unit is made of porcelain, fire enameled, designed for 750, 1000 and 1500 watt lamps.



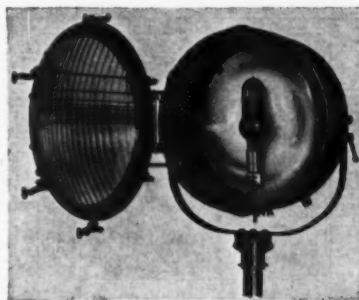
An adjustable bushing rack is announced by The Efficiency Electric & Mfg. Co., East Palestine, Ohio, requiring only one bolt to support bushing and at same time clamp bushing support to the rack. The rack is standard rolled steel channel, in sizes  $1\frac{1}{2} \times \frac{1}{2} \times \frac{1}{4}$  in. and  $1\frac{3}{4} \times \frac{5}{8} \times \frac{1}{4}$  in., varying according to size of bushings and number of mounting to each rack. Bushing supports are of malleable iron; bushings of glazed porcelain, extra large and heavy. Any desired spacing of bushings, from center to center, can be furnished.



A complete line of heavy duty vapor-proof equipment has just been developed by the Ivanhoe Division of the Miller Company, Meriden, Conn., available in the bowl, angle, flat, cone, dome and holder and globe only types for use with lamps from 150 to 500 watts. All metal parts of unit are of aluminum or brass with exception of reflector which is steel porcelain enameled.



An open-type floodlight, announced by the General Electric Co., Schenectady, N. Y., adaptable for lighting baseball and football fields, miniature golf courses, tennis courts, and gasoline filling stations, is designed for use with one or two lamps, ranging from 750 to 2000 watts. A mogul-to-mogul socket adaptor makes it possible to use 500 lamps if desired. The 30 in. reflectors are of copper-bearing steel with a green fire-enamel finish on back and a three-layer white fire-enamel finish, thrice baked, on reflecting surface. Units can be supplied with various types of mountings, such as goose-neck and polo-type brackets. Both horizontal and vertical adjustments of floodlight are provided.



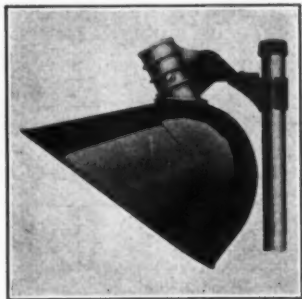
Type ACB-25 airport floodlight is announced by Westinghouse Electric & Mfg. Co., Pittsburgh. All vital parts of floodlight are enclosed in silicon-aluminum alloy housings. Inside the housing is a large silvered glass reflector 25 in. in diameter with a 300-watt, 32-volt lamp, producing a beam of more than 10,000,000 candlepower. Entire front of housing is covered with glass lens in the form of prisms which bend the light so that beam takes the shape of a fan. Unit has sheets of stainless steel mounting in the form of a louvre just back of front lens.



## New Electrical Products



Keystone floodlights manufactured by the Electric Service Supplies Co., Philadelphia, are particularly adapted to the illumination of gasoline service stations, parking areas, miniature golf courses, football and baseball fields, tennis courts, swimming pools and other similar areas. These units are made of heavy gauge sheet metal, riveted to a cast aluminum ring upon which cast aluminum lamp socket housing is set screwed. The top of the cast aluminum socket housing is tapped for  $\frac{3}{4}$  in. pipe for proper mounting. No. 24965, for use with general lighting service 300 or 500 watt PS lamp, is provided with Mogul socket and housing is made of sheet steel, inner surface of which is sprayed with aluminum paint. Exterior surface is painted battleship gray. No. 25004 is the same as No. 24965 except that rear portion of housing is supplied with polished chrome steel reflector, spotwelded to sheet steel skirt.



The Apollo floodlight for illuminating large ground areas and low buildings is being manufactured by American Appliance Co., Kalamazoo, Mich. This unit has cast aluminum weather-proof socket housing; reflector surface furnished in white porcelain enamel or special metallic finish; beaded edge; heavy gauge rust-resisting steel reflector; set screws for adjustment of lamp socket; universal 2-in. bracket for mounting on pipe standard, vertical or horizontal surfaces and a joint between socket housing and reflector cushioned with asbestos gaskets.



Pittsburgh Reflector Co., Pittsburgh, announces Permaflexor floodlight No. FLC-1002 designed for use with 1000-watt G-40, 1150-volt, clear bulb, floodlight lamp having light center length of  $5\frac{1}{4}$  in. and the concentrated filament construction. This floodlight is practically identical with FLC-501, the only difference being in the focusing mechanism which is adjusted so as to permit the use of this spherical bulb lamp.



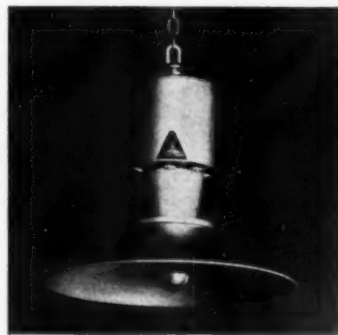
A 150-watt tubular lamp is announced by General Electric Co., Cleveland, Ohio, adaptable for cove lighting, island show windows, footlights for show windows, etc. The diameter of this lamp is  $1\frac{1}{4}$  in., overall length  $11\frac{1}{4}$  in., and the filament is 9 inches. It may be burned in either base down or horizontal positions.



National Carbon Co., New York, announces an Eveready wireless-electric wallite, equipped with pull chain switch operating from any direction. Unit has a pair of screws for securing tight in place. Dimensions are  $5\frac{3}{4}$  in. by  $4\frac{1}{2}$  in. by  $1\frac{1}{2}$  in. thick, and is made either in old ivory or black morocco finish, with Butler nickel trimmings.



The Ivanhoe Division of the Miller Co., Meriden, Conn. announces a duo-purpose lighting fixture of the indirect type with two circuits, one for indirect lighting with ultra-violet radiation employing one S-1 sun-light Mazda lamp, and the other for indirect lighting with visible radiation employing 5 Mazda lamps of 75 or 100 watts. The bowl of unit has an oxidized aluminum reflector for the S-1 lamp redirecting light from lamp upward to large ceiling reflector portion of fixture in the case of catalog No. 2113, from which the S-1 illumination is again reflected downward. Catalog No. 2112 fixture is designed for use only where ceilings have been finished with specially prepared aluminum panels reflecting the ultra-violet light. This fixture operates on 110 120 volts, 60 cycle, a.c. service.



A combination-transformer sun-lamp is announced by Bryant Park Electric Lamp Co., New York City. The reflector is all-aluminum, 20 in. diameter with oxidized surface for ultraviolet reflection. Cast aluminum encloses and braces the transformer and monel-socket for safe shipment and installation. Installation is accomplished by connecting two open transformer terminals with No. 10 wire to existing a. c. 115-volt line; all internal connections are welded and provided for.

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**Statement of the Ownership, Management, Circulation, Etc., Required by the Act of Congress of August 24, 1912,**  
of Electrical Contracting, published monthly at Chicago, Ill., for April 1, 1931.

Before me, a notary public in and for the State and county aforesaid, personally appeared S. B. Williams, who, having been duly sworn according to law, deposes and says that he is the business manager of Electrical Contracting, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are: Publisher, Electrical Trade Publishing Co., 520 N. Michigan Ave., Chicago, Ill.; editor, S. B. Williams, 520 N. Michigan Ave., Chicago, Ill.; managing editor, V. A. Hanson, 520 N. Michigan Ave., Chicago, Ill.; business manager, S. B. Williams, 520 N. Michigan Ave., Chicago, Ill.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member must be given.) Electrical Trade Publishing Co., 520 N. Michigan Ave., Chicago, Ill.; Howard Ehrlich, 520 N. Michigan Ave., Chicago, Ill.; Edgar Kobak, 10th Ave. at 38th St., New York, N. Y.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.) S. B. WILLIAMS

Sworn to and subscribed before me this 26th day of March, 1931.  
(Seal) Esie E. Storer.  
(My commission expires December 19, 1932.)

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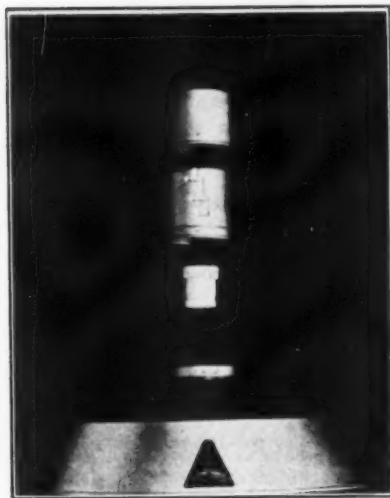
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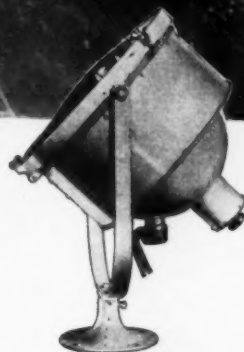
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